

DEVOLUTION OF HEALTH SERVICES

A STUDY OF THE IMPLEMENTATION OF DECENTRALIZATION IN KHARTOUM LOCALITY, SUDAN.

A dissertation presented by

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DEDICATION

**“To the soul of Dr. Ali Fadul Ahmed Fadul
To everyone who cannot afford healthcare services
And to my parents”**

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LIST OF ABBREVIATIONS

IUATLD	International Union Against TB and Lung Disease
HSR	Health system reform
PS	Private sector
PHC	Primary health care centre
DH	Disrict Hospital
RH	Referral Hospital
DS	Dispansaries
FMOH	Federal Ministry of Health
SMOH	State Ministry of Health
SPSS	Statistical Package for the Social Sciences software
TB	Tuberculosis
TBMUs	Tuberculosis Management Units
UIO	University of Oslo
WHO	World Health Organization
NIH	National Health Insurance
FGDs	Focus Group Discussions
Pts	Patients
HHS	Households
EPILAB	Epidemiological Laboratory
PAU	Popular Adminstrative Unit
HIS	Health Insurance Scheme
HAMT	Health Area Management Team
HAC	Health Area Council
VHC	Village Health Committees
IFIs	International Financial Institutions

SAP	Structural Adjustment Program
IMF	International Monetary Fund
WB	World Bank
NGOs	Non Governmental Organizations
AIDS	Acquired Immunodeficiency Syndrome
CMS	Central Medical Supply
CDF	Circular Drug Fund
ICU	Intensive Care Unit
CT Scan	Computerized Tomography Scan
MRI	Magnetic Resonance Imaging

ABSTRACT

DEVOLUTION OF HEALTH SERVICES

A STUDY OF THE IMPLEMENTATION OF DECENTRALIZATION IN KHARTOUM LOCALITY, SUDAN.

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Background: Decentralization of health services is widely practiced throughout the world especially in the developing countries to ensure improvement in the performance of the health system, increase population access to service and the efficiency of the delivered services.

The experience from developing countries indicates various degrees of achievement of the goals. Particularly challenging are the contexts of disparities in the distribution of financial, human resources and facilities, and few NGOs to ensure community participation. In order to better understand the conditions that decide success or failure for decentralization, it is important to explore the process of policy implementation, how the resources have been allocated, and how the context and decisions that have been taken during the process of the implementation will shape the policy consequences.

Objectives: The main study objective is to explore the process of the devolution implementation through the perspectives of multiple stakeholders in the process. The objective is therefore also exploring the effect of the policy on the utilization of health services and job satisfaction of health care providers.

Methods: This is a mixed methodology cross-sectional study conducted among household members, health care providers, policy makers, and NGOs representatives. Data was collected using household survey, analysis of routinely collected hospital data from hospital

records, and review of public documents for quantitative. Moreover, the qualitative data was collected through semi-structured in-depth interviews. A total of 418 participants were randomly selected for the household survey after meeting inclusion and exclusion criteria. In addition to 100 study informants were selected from health workers, policy makers and NGOs representatives for an in-depth interview.

Results: The qualitative in-depth interview data was used to explore the process of implementation which described by study participants as a political decision that has been implemented in a top-down manner without the participation of the stakeholders.

Study participants experienced that access, affordability, and quality of health care services deteriorated significantly from 53.3% to 34.9%, 54.1% to 20.3%, and 42.6% to 32.5% of the study participants respectively ($P < 0.01$). Although the availability of drugs and health workers improved after devolution, but the available was described as junior poorly trained staff, and expensive drugs that are out of health insurance coverage. Study participants perceived the closure of facilities, and reverse transference of services during the process of devolution implementation, and low capacity of the devolved facilities as causes for this drop in the access to health care services.

The study shows centralization of the human resource management, deterioration in job security and training quality after devolution. Furthermore, strengthening of the private sector emerged as one of the health system effects of devolution.

Conclusion: The decision was political and implemented without stakeholders' involvement. Furthermore, the strengthening of the private sector emerged as one of the health system changes that occurred after devolution. The access, affordability, and quality of health services have deteriorated after devolution.

Key words: Devolution, Implementation, Access to health services, Affordability of health services, Quality of health services, strengthening of private sector.

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1. INTRODUCTION

This section contains a description of the background information related to the topic of the study. It consists of four parts, which include the composition of the health system, the definition, and types of decentralization, the different definitions and dimensions of access to health services and job satisfaction of health workers. Moreover, the section provides a profile of Sudan and the study area. First is a short introduction to the subject of the thesis.

In 2010, the president of Sudan released a republic decision to transfer the authority of secondary and tertiary health service delivery, including the political, administrative and financial authorities, from the Federal Ministry of Health (FMOH) to state and locality level (Primary Health Care and Rural Hospitals).

In 2012, the Khartoum State Ministry of Health extended the above-mentioned policy in a decision to transfer health services from the big central hospitals to smaller district hospitals. These central hospitals were federal hospitals and had important roles as teaching hospitals. All federal hospitals, except five, were located in Khartoum state-, the capital of Sudan- (Khartoum locality which is the study area part of it), This decision is referred to in this thesis as the devolution decision, and the topic of this thesis is to explore the implementation of that decision.

The devolution meant that service delivery would be transferred from the central public teaching hospitals (Khartoum Teaching Hospital and Jafar Ibnoaf Child Health Hospital) to the peripheral district hospitals of Khartoum state (Ibrahim Malik, Alacademy, Alturky, Bashair, and Saad Abualala Maternity hospital). As a consequence of that decision, SMOH decided to transfer health workers and equipment between the hospitals.

The policy was implemented under already challenging conditions within the health system. Before implementation of decentralization, Sudanese doctors conducted a strike between 2009-2010, and one of their requirements was the improvement of the work environment, including infrastructure, training, and salaries. The media had also raised the important issue of the migration of healthcare workers. The government has responded, by making the decision, to allocate 1% of the money transferred between states, in order to improve health workers' salaries and to motivate them to stay in the country.

The implementation of decentralization raises questions whether, if done in the right way, it leads to an improvement in the access and quality of healthcare services as well as job satisfaction of health workers. Furthermore, can decentralization work in any setting to achieve its goals that mean in settings with poor infrastructure, human resources, and limited civil society? Examining the process of the decentralization implementation offers possibilities for adjustment of the immediate consequences of the policy, if they are in line with the desired policy outcomes or not. In this way, interventions can be made in order to redirect the policy implementation process toward achieving its goals.

Grindle (1980), and Walt. (1994) argued that the implementation process is the most important part of the policy- making because it shapes both policy contents and consequences. This study will use the Grindle's (1980) model of public policy implementation to explore the process of how the resources were allocated, and the involvement of actors in the process.

1.1. Definition of Decentralization

The term decentralization has a different definition depending on the context; whether in politics, economy and management, but here I will concentrate in its definition with regards to healthcare.

The WHO has differentiated between two parts of decentralization. To elaborate, there is functional decentralization, which means the responsibility and authority of performing specific functions that have been transferred from the central level (FMOH), to the specified local office. While the other part is geographical decentralization, which means broad responsibilities of public functions being transferred from the central level (Mills, 1990).

Also, decentralization has been defined by Bossert (2002), as the transfer of fiscal, administrative, ownership and political responsibilities from the central ministry of health, to the local institution in response to health needs of the local communities (Bossert & Beauvais, 2002).

1.2 Types of decentralization

There are four types of decentralization, which are, *de-concentration*, *devolution*, *delegation*, and *privatization*, which illustrate the different degrees of decentralization, within authorities and responsibilities. These types are differentiated mainly through the legal framework of the decentralization (Mills, 1990).

- **De-concentration**

Defined as, the handover of some administrative responsibilities from the Federal Ministry of Health to the district level office belonging to the Federal Ministry of Health. This type is the least extensive type of decentralization because it does not contain transmission of political responsibilities, but only administrative responsibilities, as it occurs inside the same governmental institution.

- **Devolution**

Defined as, the transfer of political responsibilities to the sub-national level, which is called the local government or local authorities. The local authorities are independent of the national level and have clear legal status, well defined geographical boundaries, and also, have access to revenue resources and expenditure, and a well-defined set of functions to perform. (Such as the transfer of responsibilities from FMOH to SMOH in the Sudan's experience).

- **Delegation**

This includes the transmission of responsibilities of management from the central government (FMOH) to institutions or organizations outside the structure of the FMOH, which are indirectly controlled by the central government, with their funding and management staff as well as legal framework. For example, teaching hospitals in some African countries are managed by the delegation as in Zambia.

- **Privatization**

Defined as, the transferring of government functions (health service delivery) to voluntary organizations or private profit-making or nonprofit making organizations. Privatization has happened in two forms in developing countries, due to the inability of the government to finance health services. Some duties of service delivery have been transferred to NGOs or the private sector. The second form has occurred in developed countries as part of the free market ideology.

At the level of implementation, decentralization has a wide range of differences from country to country and from one community setting to another (Richard B. Saltman, 2006).

Decentralization has been implemented as part of health system reform packages, in many developed and developing countries, to improve access to health care and quality of care (El-Sony et al., 2003).

(Riita-Liisa Kolehmainen-Aitken, 1999) argued that there is a rapid increase in the number of countries that have applied decentralization in their health systems from the 1990s. The general idea behind decentralization is to increase efficiency by decreasing bureaucracy. This is because small administrative organizations are more structured and work more profoundly than large ones as mentioned by Max Weber - German sociologist in the 1800s- as cited in (Richard B. Saltman, 2006).

There has never been enough awareness about the multi-dimensional and complex nature of public policies such as decentralization (Elabbasi, 2003). The same approach used for routine decisions is frequently used for important decisions like decentralization. Only rarely enough attention is paid to implementation and the political dimension of the policy. The administrative and political background of the policy has never been examined (Elabbasi, 2003). In the history of Sudan policy implementation has not been persuading because many times it was faced with absolute resistance as noticed by (Moharir.V, 1986; Rondinelli, 1981a).

The implementation of decentralization affects the way of organization of all building blocks of the health system, so it is important to know what these six building blocks are.

The health system consists of all organizations, institutions, people and resources that have a common aim, which is to improve health (WHO, 2010). It is formed of six components, which have been referred to as the building blocks of the health system. These building blocks are interconnecting and interacting with each other and with other national and international organizations that have an interest in health issues (Gilson, 2012). The decentralization raises the following inquiries about the organization of the building blocks of each health system:

- Service delivery: for example, to whom, by whom and where are services being delivered?
- Health workforce: such as, who has the license to deliver the service? How is the performance determined?
- Health information system: which includes, determining if the recording and reporting system is in place, and what type of technology is to be used?
- Access to essential medicines: how are drug issues regulated? What are the guidelines on the rights to sell the drug?
- Financing: for instance, how revenue is generated for programs, and how health providers are paid?

- Leadership and governance: including policy authority: - who makes health policies? Are stakeholders involved or not? Who is in charge of the health clinics? Who is managing them? In addition, whether clinics are private or belong to the public sector?

As this study is concerned with the perceived effects of the process of decentralization implementation on the access to health care services and job satisfaction of the health care providers, so, it is essential to define access to health care services and job satisfaction.

1.3 Access to health care services

1.3.1 Definition

Access is defined as the way of entering a place, and acquiring the right or chance to reach or use something. Access to service can be defined as the simplicity by which communities or consumers can employ service appropriate to their needs; variation in the conceptualization of access between factors that influence the contact with services or characteristics of providers or the actual process of care (Daniels N, 1982).

Access is frequently described as the use of service which is triggered by the need for care (Shengelia B, 2003). Access is also defined by the logic of supply and demand; access can be expressed as a product of supply factors, like location, availability, cost and appropriateness of service as well as demand factors such as knowledge, attitudes and skills, self-care practices, and the burden of disease, (Aday LA, 1974).

(Shengelia B, 2003) argued that access lies between concepts of predisposing factors to utilize service on one side and to enable health system factors on the other side. Predisposing factors are constituted of, an individual's perception of the disease and population specific cultural, social and epidemiological factors. Whereas, allowing factors include wherewithal available for individuals to use health services. Health system factors encompass resources, structures, institutions, procedures and regulations through which health services are delivered (Shengelia B, 2003).

At the conceptual level, both population distinctiveness and resources can be adapted to guarantee access, but only resources can be modified in the short term (Frenk J, 1992). Obstacles such as the price of service, transportation time and waiting time are more addressable in the health policy than broad population social and economic issues (Frenk J, 1992).

A More comprehensive view to access should reflect on structural factors of the health system (availability), features of individuals (predisposing and enabling factors), and process factors which describe the way access is recognized and related to aspects of availability, accessibility, accommodation, affordability and acceptability. Others linked to access include geographic access, resource availability, cultural acceptability, financial affordability and quality of care (Aday LA, 1974; Andersen RM, 1995).

1.3.1.1 Access when defined as opportunity

Access is set as a chance not only to reach but to have appropriate services according to alleged need for care (Haddad S, 2002). Subsequently, access is realized as a crossing point between two characteristics: characteristics of persons, households, physical and social environments and features of health systems, organizations and providers (Penchansky R, 1981).

That means discussion about access organized into three broad categories which are characteristics of the health system and structures, components of demand side (population), and factors that describe the ways of access realization (Daniels N, 1982). Consequently, access is a process that starts with the ability to recognize the need for care, to seek healthcare, to arrive at healthcare resources, to use health service, and the received care should be appropriate to need (Jean-Frederic Levesque, 2013). This framework puts the concepts of utilization of health services as synonymous to the realized access (Andersen RM, 1995).

1.3.2 Dimensions of access to health care services

There are five aspects of access which are (Jean-Frederic Levesque, 2013):

- 1- Approachability
- 2- Acceptability
- 3- Availability and accommodation
- 4- Affordability
- 5- Appropriateness.

Five types of people with varying abilities to interact with five aspects of accessibility are fundamental in the creation of access. These five abilities embrace:

1- Ability to perceive 2- Ability to seek 3- Ability to reach 4- Ability to pay 5- Ability to engage (Jean-Frederic Levesque, 2013).

Approachability: includes the ability of people to recognize service, contact, and benefit from that service (Jean-Frederic Levesque, 2013). Different factors such as transparency, and information regarding available treatments and services that all can contribute to approachability of service (Jean-Frederic Levesque, 2013).

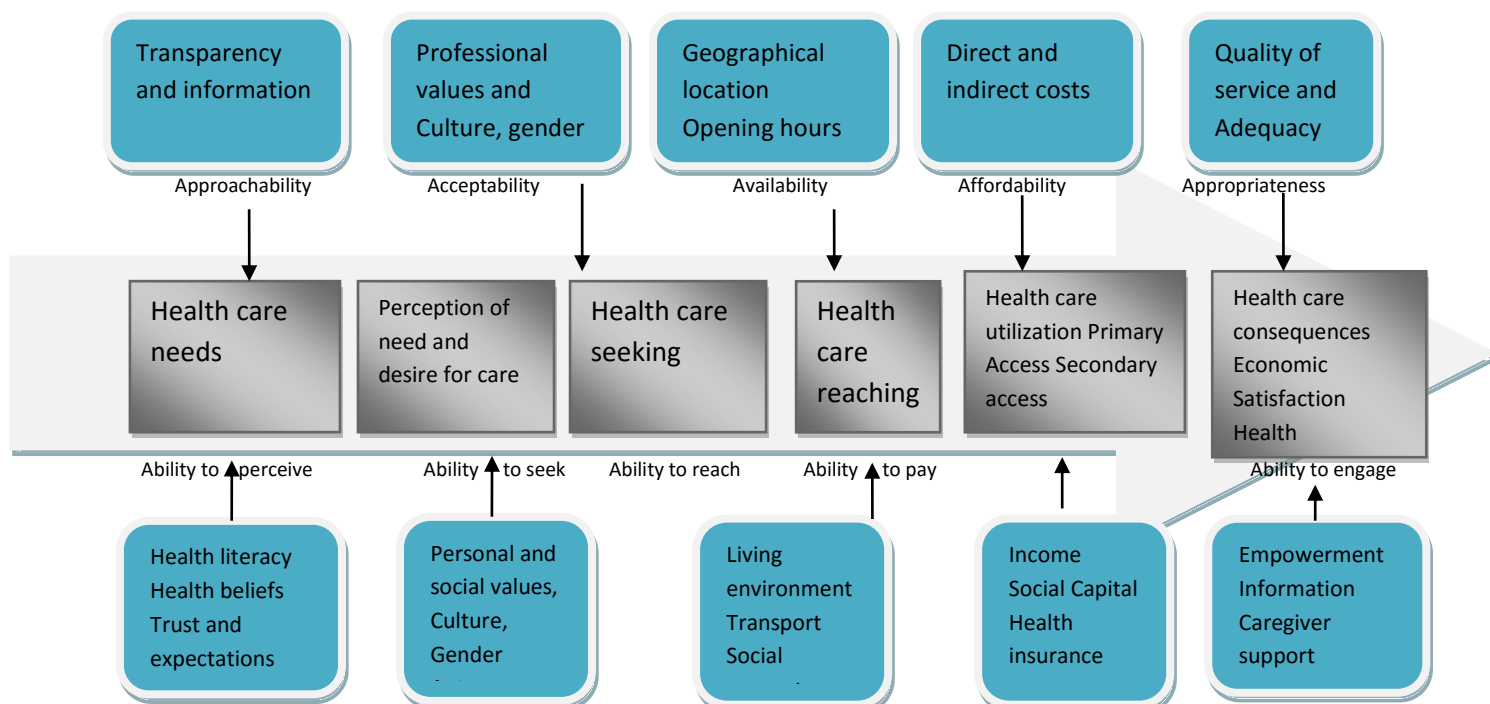
Acceptability: includes cultural and social factors that ascertain the possibility of people to accept aspects of service, these factors include sex, a social group of providers, beliefs associated with systems of medicine, and judged appropriateness for a person to seek care (Jean-Frederic Levesque, 2013).

Availability and accommodation: it involves the physical existence of health resources with sufficient capability to produce service that means features of facilities (density, concentration, distribution, duration and flexibility of working hours and quality of buildings), in addition to a transportation system which represents the general setting of the area. Moreover, it also involves characteristics of health staff (presence of health personnel, and their qualifications), and modes of provision of service (Frenk J, 1992).

Affordability: involves economic capabilities of individuals to pay out resources and time to be able to use the appropriate service. It is determined by the direct expense of service and related costs (transportation) in addition to costs that result from loss of income (Jean-Frederic Levesque, 2013).

Appropriateness: includes the type of received care as well as the quality of that care, and the healthcare worker's ability to communicate and involve individuals in the treatment affecting their utilization of that service and satisfaction (Frenk J, 1992).

Figure 1 a conceptual framework of access to services



Source: Patient-centered access to health care: conceptualizing access at the interface of health systems and populations, Jean-Frederic Levesque, Mark F Harris and Grant Russell, 2013.

1.4 Job satisfaction

Defined as the degree to which health care providers are like (satisfied) or unlike their jobs (dissatisfied) (Paul E. Spector, 1997).

Healthcare workers are an essential determinant in the process of transforming policies from paper to practice (David Kyaddondo and Susan Reynolds Whyte, 2003). Most of the research about decentralization was done about the process of decentralization formulation at political and administrative levels. But, little researches were done on the impact of decentralization on the providers of healthcare services (David Kyaddondo and Susan Reynolds Whyte, 2003).

In this study, I will depend on the framework that was made by (Lynne Miller Franco. Sara Bennett. Ruth Kanfer, 2002). However, I approached the data from the viewpoint of healthcare provider's about the effect of devolution on their job satisfaction, which concentrates on the organizational factors that are influenced by devolution on health workers' satisfaction about their jobs. The framework contains the following factors:

1.4.1 Organizational factors

Organizational factors affect the healthcare worker's level of motivation through affecting workers' capability, availability of resources and processes, reflection upon workers' performance and more generally through work culture.

1.4.1.1 Organizational structures, processes, and resources

Represent the environment in which healthcare workers perform their jobs and include the level of responsibility and authority delegation, the status of workers and the extent of organizational goals clearness to them (Health reform). The processes involve the way of work achievement and the level of resources available to achieve the work.

1.4.1.2 Organizational management structures and processes

Include availability of clear organization missions and goals in addition to standards for workers' behavior.

1.4.1.3 Communication processes

The way the information about goals and standards of the organizations reach workers.

1.4.1.4 Organizational support structures and processes

The ability to deliver service does not depend only on workers' skills, but the system support plays a crucial role in providing adequate resources (such as drugs, supplies, and equipment) to achieve tasks in an efficient way, and conferring authority and responsibility to workers to accomplish these tasks. Furthermore, providing regulations that precisely determine roles and responsibilities of all individuals involved.

1.4.1.5 Organizational systems of providing feedback

How feedback about the performance of the workers is given affects their performance and the workers' relation to the group that gives them the feedback is an important determinant of workers' motivation.

1.4.1.6 Health sector reform and organizational structure

The health system reform could affect organizational structures and processes in many ways. Such as influencing the organizational mission, reporting systems, and workers' autonomy, resources available for delivering of health service, channels of workers' performance feedback.

1.5 Sudan's profile

The context in which the policy is being implemented is an important factor of the framework that the study uses to analyze the steps of the devolution implementation. That the reason why to shed light to the profile of the country, the organization of the health system, and the profile of the study area.

Sudan occupies about 2,530,701,710 km with the population of 37,289,406, and 51% of them are male, 49% are female. The inhabitants are divided between rural (66.8%) and urban areas (33.2%) ((FMOH), 2014). Sudan now has 18 states after the separation of South Sudan in 2011.

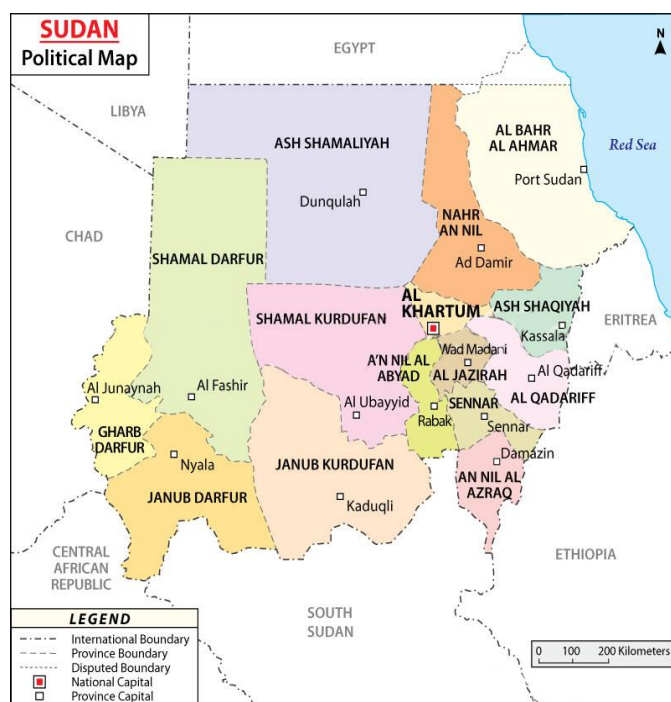
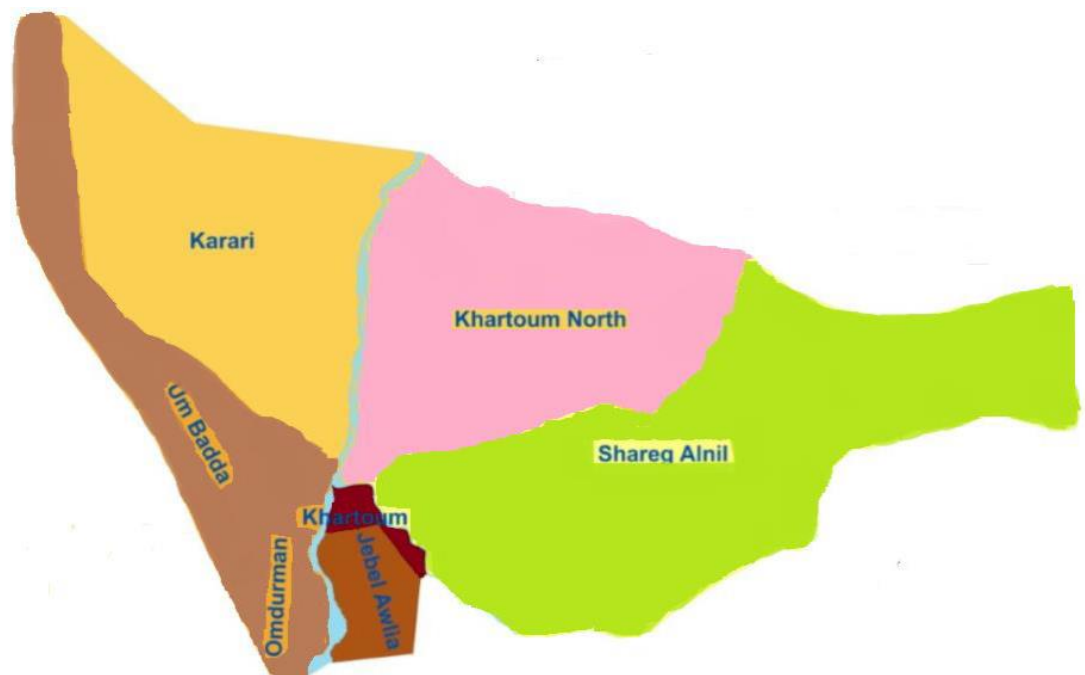


Figure 2 Sudan boundaries, administrative regions and states

Population characteristics of Sudan:

- General literacy rate is 49.9%
- Male literacy rate 50.6%,
- Female literacy rate 49.2%.
- Life expectancy at birth is 57.1 for male and 52.5 for female 55.5 years
- Crude birth rate (per 1000 population) =29.4
- Crude death rate (per 1000 population) =16.7.
- Natural increase rate per 1000 population is 26.3.

Figure 3 Khartoum state localities



The major economic activity is agriculture, which accounts for 70% of employment within the population throughout the country. After the Peace Agreement in 2005, oil became the principal constituent of the GDP, and agriculture input decreased from 46.3% to 38%. After the oil discovery, the GDP increased from 10 billion to 65 billion UUS (World Bank, 2013), ((WHO), 2006). Only 37.4% of the population (10 years old and above) is economically active. Therefore, the dependency rate is high adding up to 862 per 1,000 in the population. Per capita GDP was 1,391 USS in 2007 ((FMOH), 2014).

After the separation of South Sudan in 2011, the country lost oil revenues, which led to economic instability and shortage in fiscal allocations from the center to different states. For decades, the Sudan economy was dependent on oil, which constituted 70% of the GDP and neglected non-oil resources. In 2012, Sudan's external debt reached 41.6 billion USS (World Bank, 2013).

Poverty is widespread, although there is no exact figure of it, with quite many disparities between rural and urban regions. That has been aggravated by a substantial amount of migration from rural to urban areas, leading to an annual 4% growth in Khartoum's population and so growth in urban poverty (World Bank, 2003).

Sudan suffered from civil wars for an extended period since independence in 1956, and to this day, there is a civil war in the Blue Nile, South Kordufan and Darfur, leading to the

internal displacement of 4 million people. Two million of them are in Khartoum state. Health service coverage has deteriorated in conflict areas as well as other infrastructure; only 60% of conflict areas are covered by health services through international agencies ((WHO), 2006).

1.5.1 Organization of Sudanese health system

The Biomedical Health System in Sudan was launched in the colonial period to support colonial armies and administrative staff with medical supplies. Consequently, it was located in urban regions. It is considered as one of oldest in Africa (Elabbasi, 2003).

After Sudan's independence, the organization of the health system was kept as it was in the colonial period but with more focus on quality, and the service was free. In the sixties, massive expansion of health care infrastructures occurred, but it remained skewed towards rural areas (Elabbasi, 2003). The health system is structured in three levels: Federal Ministry of Health, State Ministries, and the local health system, which is organized as health areas (El-Sony et al., 2003; World Bank, 2003) (See figure 3).

Primary health care is delivered through primary health care units, dispensaries, and health centers which are considered as referral units for others (El-Sony et al., 2003; World Bank, 2003). (El-Sony et al., 2003) argued that the other two levels of the health system should be regulated according to a constitution, which relocates the execution of responsibilities, for preventive and curative services to state authorities. Whereas the federal level is responsible for providing policies and planning (See introduction section). Before devolution implementation, the federal was responsible for the service delivery in the national hospitals and programs (Secondary and tertiary levels services) such as Khartoum and Jafar Iboanf teaching hospitals, while the state was responsible for the service delivery in small district hospitals such as Ibrahim Malik, and Alacademy. After devolution, all national and district hospitals became under state authority (See Figure 3) including hospitals that embraced in the study.

Financing of PHC and district hospitals is the state's responsibility, while funding of primary health care at a local level is the responsibility of localities.

Going back in Sudan's history in the seventies, the prolonged poor economic situation led to the adoption of the structural adjustment program from the year 1978 and a major decrease in health expenditure. This resulted in a drop from 1.4 Sudanese pounds per person per year in 1987 to 0.24 Sudanese pound (USS = 6.1 GDP) in 1994 (Elabbasi, 2003).

The distribution of facilities showed disparities among 18 states (Elabbasi, 2003) (See Table 1) as Khartoum and Gezira states contained 27% of public hospitals, 30.5% of private facilities and 25% of PHC services. The general rate of hospital distribution is 1.2 per 100000 in Sudan. But the distribution between states showed high inconsistencies between the highest rate found in the Northern state (3.6), and the lowest which is 0.5 in Southern Darfur ((FMOH), 2014).

Table (1) explains the distribution of facilities between states, before the implementation of devolution with clear disparity towards the center.

Table 1 distribution of facilities between states before the implementation of devolution

States	Population	Hospitals	Beds	Blood banks	X-ray units	Health centers	Dispensaries	DS	PHC units
Khartoum	3472	36	4042	11	6	83	208	19	24
Central regions states (4)	6292	66	4985	11	13	228	454	624	369
Sub total	10664	102	9027	22	19	311	662	923	393
Other states (10)	13957	115	10437	14	44	287	730	435	1179
Total	24621	217	19464	36	63	598	1392	1358	1592

Source: Federal ministry of Health (FMOH, 1998).

The same report/study ((FMOH), 2014) and (World Bank, 2003) asserted that health care provider's distribution is also quietly skewed toward central areas of the country (See Table 2). Khartoum state alone contained 43% of specialists, 46% of general and trainee doctors, 31.4% of technicians and (together with Gezira state) 42% of nurses. The distribution of specialists per 100,000 of the population also shows disparities among states with the highest ratio in Khartoum state being 11.6 and the lowest ratio in Mid Darfur being 0.4(annual 2014). The distribution of general and trainee doctors in the country is 25.1/100000; all states are below this rate, except Khartoum state by 35.7/100000, with the lowest rate in Southern Darfur by 2.9/100000.

The mechanism, which was supposed to decrease the gap between states, which is the federal-state support fund (FSSF) that was formed during the implementation of the federal decentralization in 1994 also, failed to bridge the gap between states. In fact, it further increased the gap between states through concentrating the support to the richer states (Khartoum, Gazira, and White Nile) at the expense of the poorer states (Elabbasi, 2003). The increase in the number of states from nine to twenty-six during the implementation of federal decentralization had a negative impact regarding the distribution of resources and made the implementation beyond the capability of the country (Elabbasi, 2003).

Table (2) explains the distribution of health care providers by regions per 100,000 populations:

Table 2 distribution of health care providers by regions per 100,000 populations

Region	Specialist	All doctors	Technicians	Medical assistants	Nurses
Khartoum	8.4	33.7	29	36.9	96.9
Central	2	7.2	3.8	18.6	77
Northern	2.3	10	6.4	32.8	126.1
Eastern	2.1	7.3	3	18.7	41.6
Kordofan	0.8	2.9	2.7	16.6	51.9
Darfur	0.4	1.4	2.4	9.8	21.3

Source: Federal Ministry of Health (FMOH, 1995).

The rate of allotment of technicians in the country is 35.4/100000; the rate in Khartoum state is the highest by 62.8, while the rate in Mid Darfur is the lowest by 7.2/100000 (Annual 2014)

Table 3 Development of health human resources per 100000 from 2010 – 2014

Years	2010	2011	2012	2013	2014
Doctors	38	34.6	35.2	31.6	25.1
Specialist	5.9	5.6	6.2	4.2	4.3

Dentist	1.8	1.7	1	2.7	1.6
Pharmacist	2.6	4.7	4.7	4.3	4
Technicians	20	25.5	29.6	34.6	35.4
Medical assistant	20.1	23	21.5	18.7	19.6
Nurse	46.8	52.8	51.8	47.3	45.1
Public health officer/ Public health inspector	2.5	3.3	3.1	3.7	3.2

Source: Federal Ministry of Health (FMOH), Annual Health Statistical Report, 2014.

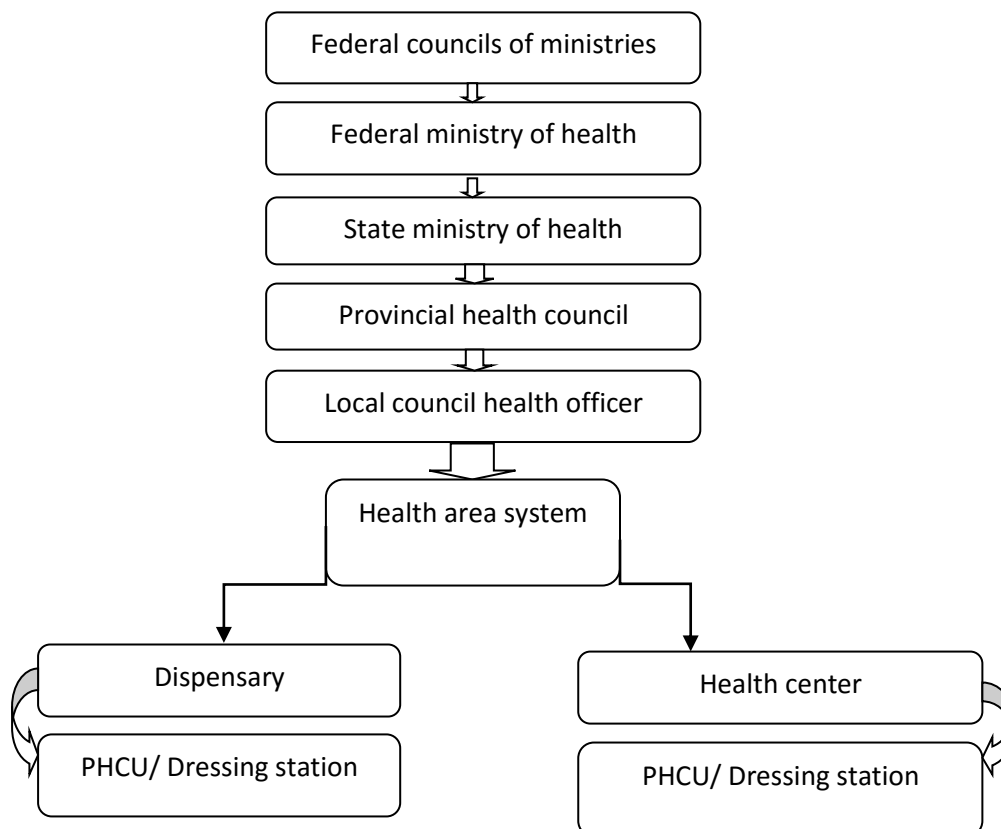
The above table explains clearly the decrease in the number of health staff and deterioration in staff/population rates from 2010 – 2014. This deterioration is demonstrated by (Elabbasi, 2003) and (World Bank, 2003) arguing that, although there is a rise in the number of medical schools and yearly graduated doctors, the number of working doctors is deteriorating due to high migration mainly to Gulf countries.

The annual increase in graduating doctors is associated with the development of the private health market. And encouraged by the government, resulting in an increased number of hospitals and clinics owned by the private sector and accessed by rich citizens, while access to primary health care facilities by the poor (World Bank, 2003) is decreasing. According to an annual statistical report, by The Federal Ministry of Health ((FMOH), 2014), the total number of public facilities are 6,435 facilities, where 5,962 of them are primary health care facilities, while private facilities are 6,983. Nongovernmental organizations (NGOs) also play an important role, especially amongst the internally displaced population (IDPs) in Darfur, South Kordufan, Blue Nile and Khartoum State to fill gaps in the governmental health system coverage (World Bank, 2003). The distribution of beds also demonstrates inequalities between states. Khartoum state alone monopolized 43.5% of total beds in Sudan. General distribution of beds per 100000 in the country is 80.1, the ration in Khartoum state is 95/100000, in the Northern state is 218/100000 and in Southern, Darfur is 12.2/100000 ((FMOH), 2014).

The annual national expenditure per capita is currently 2.1 US\$ ((FMOH), 2014). It is difficult to find a reliable number about the health expenditure due to inconsistencies in figures (Elabbasi, 2003). In 2002 WHO estimated the health expenditure as 4.1% of GDP (UNDP, 2002), while in 2001, The World Bank had a different figure of 0.07% of GDP (World Bank, 2003). In 2013, total expenditure on health of GDP was 6.5 % percent (WHO,

2016). The other resources for health expenditure, are private as explained by (UNDP, 2002; WHO, 2002) that out of pocket expenditure represented about 78.8% of health spending and 6% of external resources. Additionally, what national health insurance scheme spends on health is only about 1% of GDP, and it covers only 8% of the population, covering mainly formal sectors and governmental employees. So health service expenditure is slanted toward the rich, as out of pocket payment is the largest source of health spending (World Bank, 2003).

Figure 4 Organizational structure of health system in Sudan



Source: Public health sector reform: The implementation of federal decentralization in Sudan And its impact upon the sector of public health, (Elabbasi, 2003).

Healthcare, finance is directed toward hospital care so the number of hospitals are increased while the number of PHC Facilities decreased. When expenditure increased after implementation of out of pocket payment, which reflected on the number of general or rural hospitals, rose from 162 to 200 (World Bank, 2003) and to 367 in 2014 ((FMOH), 2014). At the same time, as tertiary hospitals augmented from 78 to 109 and decreased again to 60

hospitals in 2014 ((FMOH), 2014). Conversely, PHC facilities fell from 6,434 in 1994 to 6,134 in 2000 (World Bank, 2003) and 5,962 in 2014 ((FMOH), 2014).

1.5.1.1 Health status

In 1992, health service was available for about 70% of the population. According to the 2008 census, 54% of the population had access to safe drinking water. Moreover; about 31.4% of the population had extra disposal facilities ((FMOH), 2014).

The percentage of women delivered by trained personnel is 58.1%. Furthermore immunization coverage for Diphtheria, Pertussis, and Tetanus (DPT) is 61.3%, Oral Polio Vaccine (OPV) 59.5%, measles 70.1% and Bacillus Calmette- Guerin (BCG) 76.8% (FMOH, 2014).

In 2010, the mortality rate for children under five years was 83 per 1000 live births. Maternal mortality 360 per 100000 live births (WHO, 2016).

There are diseases, according to the annual statistical report of The Federal Ministry of Health, (2014) that are the top causes of mortality and morbidity (See Table 2).

Table 4 The leading diseases of mortality and morbidity in the health facilities

Diseases	Hospital visits (%)	Hospital admissions (%)	Deaths (%)
Malaria	11	13.6	4.3
Pneumonia	9.2	10.7	5.5
Diarrhea and gastroenteritis	4	4.7	1.7
Other respiratory diseases	3	1	0.4
Bronchitis	3	1	3.8

Data obtained from Federal Ministry of Health, Annual Statistical Report, 2014

((FMOH), 2014) demonstrated is the increase in non-communicable diseases in the country, represented by about 16% of hospital visits and 11% of death.

1.6 Profile of study area

Khartoum locality is one of seven localities that constitute Khartoum state. Khartoum district is located in the heart of Khartoum state is surrounded by the Blue Nile from the North,

White Nile from West, Jabal Awlia locality from the south, and Gezira state from the southeast.

It is the political capital of Sudan where the majority of state and federal ministries and vital facilities like the airport, universities, and hospitals are located.

The Khartoum locality occupies about 176 Km², having a population of about 759,000, and includes 186 villages and 183 public administrative units (PAUs).

1.6.1 Health profile of study area

1.6.1.1 General health condition

The most frequent diseases in Khartoum locality at the level of PHC facilities are infectious diseases. Respiratory system infections represent about 31.7% of illnesses, then comes malaria which constitutes 12.8%, gastroenteritis 7.3%, hypertension 6.4%, urinary tract infection 5.8% (PHC Unit in Khartoum locality, 2016).

1.6.1.2 Health infrastructure

Khartoum locality has 31 public PHC facilities, where 15 of them are referral health centers, and 16 are primary health care units. Moreover, there are also ten NGOs health centers and 60 private centers. The health centers infrastructure tends to concentrate on centers that are defined as urban. Only 12 centers out of 31 have a radiology service, specifically X-ray service, and ultrasound service, while thirteen out of 31 centers have an electrocardiogram (ECG) service. Two centers are run by a medical assistant, whereas others by medical doctors.

Table 5 Public PHC infrastructure in Khartoum locality

PHC Infrastructure	Lab	Pharmacy	Minor theatre	Antenatal care	Dentistry	Ophthalmology
	N\A	N\A	N\A	N\A	N\A	N\A
Number of PHC	1	3	2	5	16	5

N\A not available

Table 5 explains the number of the PHC facilities that do not contain specific types of the infrastructure.

Among NGO's health centers, only one has a dentistry service. On the other hand, no NGO center has a radiology service or ophthalmology service (PHC Unit in Khartoum locality, 2016).

The locality also has 13 hospitals; three of them are general hospitals while ten are specialist hospitals (Annual 2014). There are also 98 private hospitals and 601 private clinics ((KSMOH), 2015).

1.6.1.3 Health staffing

Regarding health care providers, the locality has 810 health staff members with different categories. There are 144 medical doctors (GPs), 39 dentists, nine pharmacists, and 24 specialists, one pharmacist assistant, three ultrasound technicians, ten sisters, six dental assistants. In addition, seven ophthalmology assistants, eight pharmacy medical assistants, 43 nurses, and 63 statistics technicians, 12 computer professionals, 56 vaccination professionals, 37 security guard members, four psychologists, 27 optics professionals, 12 public health officers. Furthermore, four health visitors, eight health visitors assistants, 80 lab technicians, 55 technicians, 40 nutrition advisors, 17 radiology technicians, 25 midwives, eight nutrition officers, 67 workers, one administrative staff, and nine theatre preparing staffs (PHC Unit in Khartoum locality, 2016).

1.7 Structure of The Thesis

This thesis comprises of eight chapters:

- Chapter 1,2 ,3, and 4 deal with the theoretical background of the study topic including the rationale of the study, critical appraisal of the methodologies used, knowledge gape.
- Chapter 5: deals with the research methodology used in this study, also the procedures of data collection with the rationale of using them.
- Chapter 6: demonstrates the presentation of findings for both quantitative and qualitative parts.
- Chapter 7: covers the discussion of the presentation of findings in the light of the available literature namely the context of devolution implementation.

Moreover, the process of devolution implementation, access to health care services, and the strengthening of the private sector.

- Chapter 8: involves conclusion.

2. LITERATURE REVIEW

This section is an overview of what is already known about the decentralization of health system and its effect on access, quality of health care, and job satisfaction of health workers. It encompasses a history of Structural adjustment program and its impact on health globally and in Sudan, the history of decentralization in Sudan including the implementation of the federal decentralization and its impact on the health system. Furthermore, the review of available literature about the effect of decentralization on the utilization of health services, and job satisfaction of health care providers. In addition, the theoretical framework that used to analyze the steps of the policy implementation process and its consequences.

It became a global trend to decentralize the public health sector, from the central government to the local government, or from large hospitals to district hospitals as mentioned by Karen Cheshire (Cheshire, 2010). It was a part of broader reform in many sectors such as economics, politics (Bossert & Beauvais, 2002).

No data about the effect of decentralization in hospitals, although they consume 50-80% of governmental health expenditure and utilize a large proportion of highly qualified health staff (Riita-Liisa Kolehmainen-Aitken, 1999).

The experiences of hospital service decentralization varies from one country to another (Riita-Liisa Kolehmainen-Aitken, 1999), ranging from devolution of hospital services to local governments in the Philippines (Hume.M.R-L.Kolehmainen-Aitken.E.Villa and T.Vian, 1996; Perez.J, 1995). To the delegation in Papua New Guinea (Thomason.J. W.H.Barnum. and R-L.Kolehmainen-Aitken, 1991), to de-concentration of the authority of the hospital operations to lower administrative levels of the health system in Nicaragua. And the transfer of hospital service authority to hospital boards that are out of the control of the health sector and government in Gambia (Riita-Liisa Kolehmainen-Aitken, 1999).

2.1 Decentralization in Sudan

The health system in Sudan was constituted by The British colony to deliver service to colonial armies and civil staff. Then medical administration (district) was instituted to deliver services to a community (Bayoumi, 1979). All services were brought by the medical administration with an apparent bias toward therapeutic services, and all plans were prepared by the central ministry of health (Bayoumi, 1979).

(M.W.NORRIS, 1983) argued, that Sudan experienced decentralization, since the presence of the British colonizers, who practiced participation of tribal leaders in the administrative issues. The district council was established in 1951 and financed through the collection of money from the local community. The staff was from the local community and included some staff transferred from the center. In 1954, a special ministry was launched to follow up districts. Many functions, like primary education, moved to these newly formed communities. After independence in 1956, nothing changed but the number of districts increased to 16. Disadvantages of this decentralization experience were described by (M.W.NORRIS, 1983) as poor coordination between districts and the center. Inadequate financial resources led to under- financing which in turn affected delivered services. Which accumulated a tendency towards centralization.

In 1960 The Provincial Act was passed by General I. Aboud which included the formation of provincial authority in each province that consisted of representatives of the government. That were selected by the Supreme of armed forces and civilians for the first time, including each provincial authority having its own financial resources (Elabbasi, 2003, P 59). This local structure worked in an effective way until 1964 when Aboud's government was no more, because of the revolution. After the October revolution, provincial councils continued working but without clear organization. However, they kept the basic service delivery at the level of the community (Elabbasi, 2003, P59).

The shortcomings of the decentralization experience were inadequate financial and management capacities of the government. In addition, they did not benefit from past experiences of decentralization but conversely began from zero. Besides that, transference of authorities to provinces without checking the ability of provinces both managerial and financial wise to obtain these authorities participated in the failure of the decentralization experiences in Sudan. (M.W.NORRIS, 1983).

The new regional governmental Act of 1980 was aiming to transfer responsibilities to regions as a form of devolution (Al Assam, 1983). It was an endeavor to overcome the disadvantages of the 1970 Act after evaluation of previous encounters with decentralization. Members of these regions were to be constituted from selected members of the party in power and elected members, but elected ones were only 10%. However, all members should be from the party in power, which was the only one allowed to exist (Elabbasi, 2003).

The Act could not determine precisely the distribution of functions between different levels, from central to peripheral regions. That in turn, led to an overlap mainly in health, education, and transportation, and/or duties, which were delegated to regions. However, it empowered certain regions by having their budget and revenues through direct and indirect taxation (Elabbasi, 2003).

At the local level, there were also conflicts of interest between the local councils and regional ministers, due to the failure of the available resources meeting the high cost of health service delivery, and the absence of skilled staff and poor planning. Implementation of regions further worsened access to service and quality of health service (Elabbasi, 2003).

The Local Government Act in 1981 aimed to transfer responsibilities to areas with an independent budget and financial autonomy. More functions were assigned to different regions including education, PHC (dispensaries), drainage and water supply, agriculture, culture and sports. The decentralization experience again missed enough guidance and resources (Elabbasi, 2003, P 65).

The elected government after March/April revolution in 1985 could not make any changes in the previous system except, surrogating of governors by new ones from political parties within the government. Lack of political parties' existence at a level of areas led to the centralization of the experience (Elabbasi, 2003). Furthermore, the short lifespan of democratic experiences was the main factor that affected the achievements during these periods.

(Fadalla, 1996) argued that in 1989, Armed forces came to power, replacing governors by members of Army troops to preserve power. Members of the local government were made redundant, and governmental officials directed the administration at the level of areas. Areas changed to provinces, and popular committees instituted at a level of villages to deliver public services and legitimize the regime (Elabbasi, 2003).

In 1991 a new decentralization policy was (federal system) implemented by a constitutional decree to overcome deficiencies from the past decentralization experiences and to achieve more legitimization for a new regime. Then nine regions were converted to states and further divided into twenty-six states (Elabbasi, 2003, P 67). And after separation of South Sudan now Sudan has 18 states.

In all experiences of decentralization, the health sector was solely influenced by the political system of decentralization. The health sector of decentralization became driven by political factors and not by health related- factors. The reasons for decentralization, had nothing to do with improving the health sector and was not done based on scientific studies, but was part of a broader political system decentralization (Elabbasi, 2003; FMOH, 2015). Political reasons included the internal political situation or external (donor related politics) which most probably are the major causes of decentralization (Riita-Liisa Kolehmainen-Aitken, 1999, 2004).

2.1.1 Healthcare and local Government Act of 1971

The changes introduced to the health system were in general community participation in finance of education and health services. Many new facilities were obtained by self-finance from communities. In 1976, a PHC program was implemented, and people were encouraged to establish PHC facilities by their own resources without plans, either from MOH or local authorities. A vast number of facilities were on hand, but it became hard to run these PHC services after the responsibility was shifted to the local administration, while hospitals were kept under ministry authority. This step further widened the gap between curative and preventive services. The experience failed due to the top- down planning from the ministry of health and inadequate organizational capacity (Elabbasi, 2003, P 69).

2.1.1.1 Regional Government Act of 1980 and health

Transfer of delivery of all social services to lower levels transferred more powers to lower government levels. (Abdel Rahim, 1992) Abdel Rahim demonstrated that the expected changes were to reduce the size of the federal ministry of health (FMOH) and to restrict its roles and delegate responsibility to regional ministries of health that did not take place.

2.1.2 Federal decentralization and its impact on health sector

Elabbasi's (2003), study about the federal decentralization and its impact on the health sector that was a part of Ph.D thesis, will be my main source for Sudan's experience in federal decentralization and its effect on the health sector.

Decentralization had a presence in different governments' agendas from independence in 1956 (Elabbasi, 2003). Federal decentralization was implemented as a solution to the cultural, ethnic disparities and underdevelopment that caused the civil war in the South. It was also a means for the quick legitimization of the new regime that came into power through a military

coup (El Tahir, 1999). New decrees were an urge to extend some new constitutional orders conducted before the previous ones were executed (Elabbasi, 2003).

In 1991, the regime held a conference to discuss the strategic planning of the country which led to the comprehensive national strategy (CNS) for 1992 – 2002, which provided the main reference for the current health policy (El Tahir, 1999).

According to federal decentralization, the government structure changed to a three level structure in which each level had its executive and legislative components (Elabbasi, 2003, P 77). As a part of some changes, provincial commissioners transferred to the state level without administrative power. Their central role was to mobilize political support for the new regime (Elabbasi, 2003). The federal level constituted of the president and his assistants, the ministerial council, twenty national ministries now became (sixty-three national ministries), national assembly and constitutional court (Elabbasi, 2003).

The division of states depended on political and tribal conciliation, more than the distribution of infrastructure and resources (Elabbasi, 2003). The extension of states from nine to twenty-six and now eighteen might reflect the idea of decentralization and community participation, but it created financial and human resource constraints. The previous nine states could not be sustained due to a deficiency in resources, so how could it be sustained in eighteen states now. These changes also led to an increase in administrative cost by 80% (Ahmed, 2002).

Distribution of power within the decentralized system was as follows: The federal level had the exclusive responsibility in the field of foreign affairs, defense, national security, economy and interstate issues. Health, education, internal security, and social welfare were to be combined with the responsibility of state and federal levels. Nevertheless, in the case of conflict, the federal level has sovereignty. This type of government structure encourages centralization which is against federalism principles (Elabbasi, 2003). So localities were a part of states and became accountable for state authority instead of a localities population which led to the sovereignty of states on localities to the degree that the state governor is dissolved localities (Elabbasi, 2003).

Distribution of resources did not receive enough attention during the different stages of decentralization in Sudan. It depended on the personal and political bias and led to inequalities between states (Fadalla, 1986). The constitution of 1998 assigned sources for fiscal revenues for each governmental level but the distribution of income sources was biased

towards the state level at the expense of the locality level due to limited tax capabilities at the local level (Elabbasi, 2003).

An additional problem that contributed to the misdistribution of power and authority was the concentration of work force in the center. The federal policy tried to solve this issue by redistribution of human resources to the state and local level which was faced by resistance (Elabbasi, 2003).

The allotment of top positions was under the control of the federal level while poor-grade jobs were under state control and a similar relation between state and locality. States and localities lost control over their senior staff, in addition to the absence of clear roles in the capacity buildings at the federal level (Elabbasi, 2003).

2.1.2.1 Organization of public health sector under the federal system

The Public health sector was differentiated into three levels: federal, state ministries of health and local health authorities. Each level has a legislation body which is the national assembly, committee on social affairs and area of health council at the local level (Elabbasi, 2003, P 84).

The constitution of 1998 divided health tasks as national and shared tasks between the federal level and states, the only exclusive errand for the national level is epidemic control. Other errands were in a shared list, while the local level was considered as part of the state, not to mention the distribution of tasks. The issue of autonomy was ignored (Elabbasi, 2003). The federal level also took responsibility for coordination but only after being approved by the federal ministerial council. This complexity enabled the federal level to legislate over state issues and control state resources which are against principles of federalization (Elabbasi, 2003).

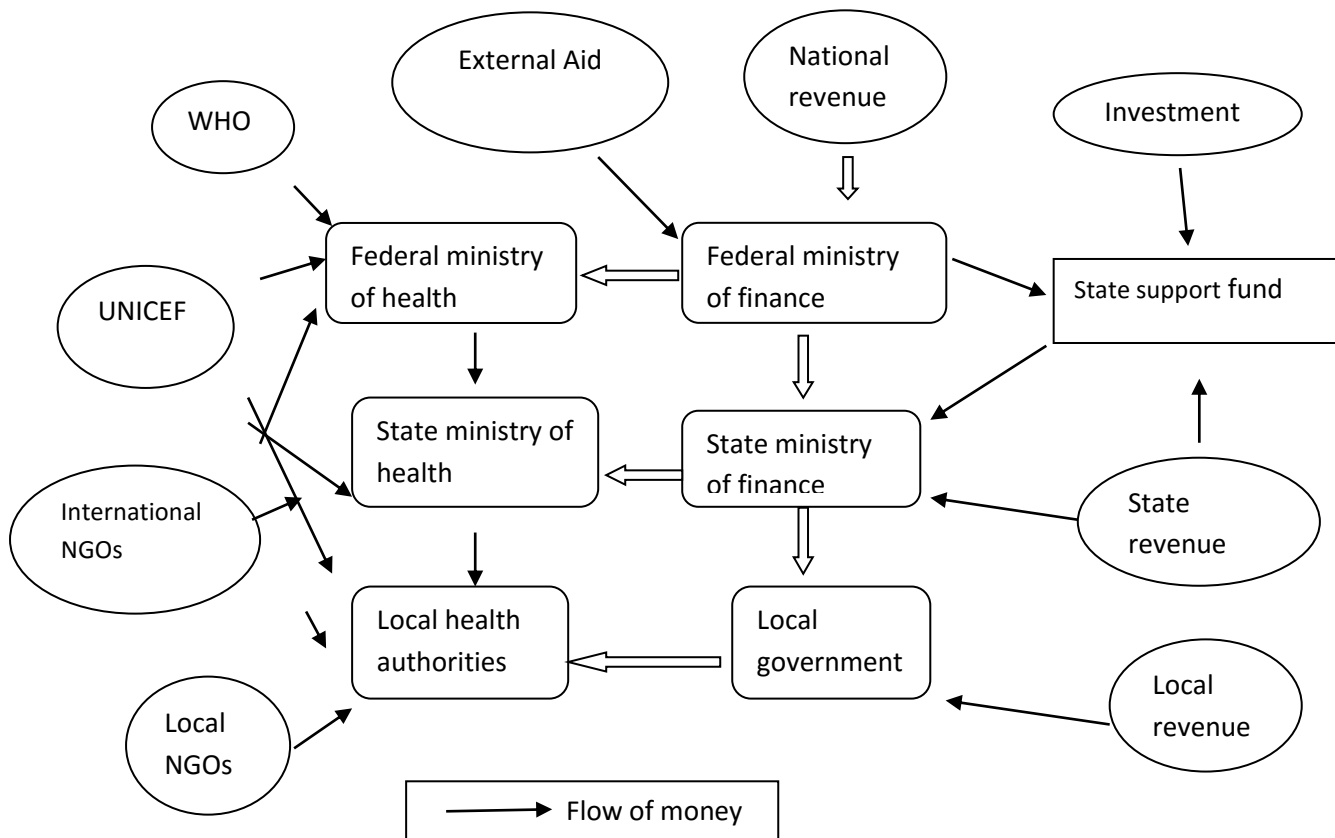
States have not had any particular exclusive jobs but only had a list of shared jobs at the federal level.

2.1.2.2 Financial relations in the health system

The financial arrangements have undergone fundamental changes, to create more state autonomy. Instead of flow of funding from the federal ministry of finance to the federal ministry of health and then to state ministries, it flowed directly from federal finance to the state (Elabbasi, 2003, P 86).

Adding to those mentioned above, either the state or local levels were able to be funded by international or local NGOs when they worked directly at the state or local level (Elabbasi, 2003).

Figure 5 Financial relations in the federal system



Source: Public health sector reform: The implementation of federal decentralization in Sudan

And its impact upon the sector of public health, Elabbasi, 2003.

2.2 Implementation of federal reform in the public health sector

The process of implementation began in 1993 that is the most important background for my study and involved all levels of the health system. I will now present and analyze the changes that accompanied this process at each level (Elabbasi, 2003).

2.2.1 At the federal level

This study concentrated on changes that occurred in FMOH's structure to enable it to perform new tasks. And also to see the role of FMOH and other federal agencies in the

process of implementation, in planning, financial coordination, capacity building, and then comparing the results to the expected outcomes (Elabbasi, 2003, P 101).

2.2.1.1 Past experiences of policy implementation

In developing countries, a political aspect is often lacking during policy design, while it emerges during implementation (Grindle. M, 1980; Grindle. M and Thomas.J, 1991). Implementation is considered the most vulnerable part of a policy especially in the developing countries (Iglesias, 1978). The implementation of decentralization in developing countries has had very limited success as noted by many authors (Bossert.T, 1996; Conyers. D, 1984; Mawhood.P, 1983; Moharir.V, 1986; Rondinelli, 1981b).

In the Philippines, devolution of health service was associated with the transfer of 46,000 employees out of 70,000 departments of health employees (DOH), infrastructure including the infrastructure of 490 hospitals out of 534 public hospitals to local government units in two years (Bossert & Beauvais, 2002).

FMOH underwent two types of changes with federal reform: It lost most of its executive role in service delivery (running hospitals) (Elabbasi, 2003). In addition, it changed its role in national policy making toward designing of general health policy and planning. It became the controller of the implementation of health programs throughout Sudan, health research, and external agencies monitoring. Subsequently, the implementation of decentralization to be successful in Sudan will depend on the supportive role of FMOH to a large extent (Elabbasi, 2003).

(Walt.G, 1994) argued that there are other reasons for failure of decentralization implementation in developing countries which are, that it is frequently implemented for political motives and in a very rapid manner. That means that there is not enough time to prepare for implementation. This also happened in Nicaragua as has been raised by this literature:

(V. G. Mills.A, Smith.D, & Tabibaadeh.I., 1990) stated that the reason for decentralization of services in Papua New Guinea was a political reason.

Although decentralization was implemented in Nicaragua as a technical matter, the empirical evidence showed that the implementation was shaped by the political context (Anne_Emanuelle Birn, 2000).

Also, the public health sector in developing countries is mostly not an area of priority (Walt.G, 1994). Senior personnel in the health sector in Sudan have a medical background and do not have experience in policy making and management issues (Elabbasi, 2003).

2.2.1.2 Changes of FMOH

The new responsibilities of FMOH were guided through constitutional modifications, new health orders, presidential decrees and executive commands (Elabbasi, 2003). The structure of FMOH had to be altered according to its new expected roles. Consequently, the policy-making role of FMOH had to be reorganized; staffs also had to be trained and motivated according to their new roles. Staff size should be reduced as their tasks had been transferred to lower levels (Elabbasi, 2003).

The remaining small staff should be highly skilled and trained well to take the new responsibilities which are planning of policies, supervision of implementation to detect blockages and how to solve them. To do all these tasks, FMOH should be supported by other relevant federal agencies such as Federal Ministry of Finance, Federal Ministry of Manpower, Federal Ministerial Council, and Federal Government Chamber. Moreover, Federal Parliament in legal, financial, regulatory, managerial, and human resources which are crucial for successful implementation of decentralization (Elabbasi, 2003).

2.2.1.3 Allotment of functions in the public health sector

It is hard to determine the exact beginning of a new policy implementation (Elabbasi, 2003). Let's observe February 1994, as at that time two important events took place: the division of the county to twenty-six states, federal, and state positions related to new tasks were filled (Elabbasi, 2003, P 102).

To allocate functions in the public health sector, constitutional declarations 10, 12 and 14 within the constitution of Sudan have been released in 1998 (Elabbasi, 2003). The Federal Government Chamber and Federal Ministerial Council took responsibility for federal decentralization coordination (Elabbasi, 2003). Their primary duty was to review the legislations that regulate the central regional locality relations and observe for changes or replacements needed (Elabbasi, 2003). Unfortunately, the formation of subsidiary legislation was not carried out by the same eagerness of constitutional decrees released (Elabbasi, 2003). The most important issue was, which tasks will be transferred to local and state levels and which will remain at the federal level (Elabbasi, 2003).

The National Health Council had been formed to coordinate the whole process of decentralization. The process moved very slowly. For example, from the twenty-nine health laws that needed assessment, only three of them were assessed, which are General Health Law of 1975, Environmental Health Law of 1997, and The School Health Act of 1998 (Elabbasi, 2003). The reasons for this delay varied, from the unwillingness of FMOH leaders for reform to a lack of follow-up by The Federal Government Chamber and Federal Ministerial Council and most significantly, from higher level politicians (Elabbasi, 2003).

This situation of emptiness allowed every actor to interfere with the constitutional decrees according to their interest (Elabbasi, 2003). Although some initiatives were taken like The Federal Ministerial Council Act 489 of 1996 about the organizational structure of FMOH, it was limited by its concentration on the job descriptions of FMOH directorates rather than determining the scope of FMOH intervention within federal decentralization (Elabbasi, 2003). Another initiative was concerned with functions at the local level called The Federal Government Chamber 1998 (Elabbasi, 2003). Both mentioned efforts were released without an involvement of either Federal Minister or Undersecretary of Health (Elabbasi, 2003). The expected result was a lack of political support (Elabbasi, 2003).

In conclusion, the effect of constitutional decrees on the implementation of decentralization in the health sector at different levels was fragmented, delayed and lacked involved actors consensus (Elabbasi, 2003).

2.2.1.4 New functions of Federal Ministry of Health

Two legislations determined FMOH's new tasks, which are The Federal Ministerial Act 489 of 1996, General Health Law of 1998, which after modifications is as follows:

- 1- Designing of health policies, national health legislation, and strategic health planning.
- 2- Definition of national health standards.
- 3- Development of human resource.
- 4- Monitoring and evaluation of health policies.
- 5- International relations coordination, regulation, and promotion (Elabbasi, 2003, P 103).

All involved perpetrators agreed that these outlines need more illustration and specification, but that did not happen as mentioned in the annual statistical report (FMOH, 1997). Lack of

experience at the federal level and state level about concurrent power led to confusion during the process of implementation (Elabbasi, 2003).

2.2.1.5 Structural change and compliance

As mentioned above about the lack of guidance from The Federal Ministerial Council and Federal Government Chamber led to personalization of the FMOH (Undersecretary of Health) response to decentralization. Also, to that, there was high turnover amongst undersecretary staff, and they were not trained for that duty (Elabbasi, 2003, P 107). There was a plan for the reorganization of FMOH by appointment of senior personnel with political weight, but the old staff in FMOH were afraid to lose their positions, causing resistance in the process of restructuring (Elabbasi, 2003).

As a result, reorganization became part of the politics of settling of accounts inside FMOH, more than means of facilitation of decentralization implementation in the public health sector as historically; reorganization used either to purge opponents of the new regime or to provide benefits to supporters (Elabbasi, 2003).

The new structure of FMOH did not differ from the previous structure (Elabbasi, 2003). The number of senior posts was reduced to eight to standardize with other ministries (Elabbasi, 2003). Two directorates of Medical Specialties and Curative Medicine were combined to one. The Directorate of Medical Supplies was converted to an autonomous body outside FMOH.

The Directorate of Finance and Administrative Affairs was restored, although much of its work had been transferred to states. Environmental health, health promotion, nutrition and food quality control have not received enough attention and remained part of the Directorate - General of Social and Preventive Medicine. The outcome was intra-bureaucratic politics between public health officers and medical doctors and in the end; medical doctors underestimated the public health officials (Elabbasi, 2003).

The reorganization decreased FMOH workload but was never implemented as internal sections in the directorate that supposedly should have been minimized, stayed without change (PHC Directorate had eight sections instead of supposed four) (Elabbasi, 2003). The justification for this outcome was due to over concern by the distribution of posts inside the ministry more than with the performance of FOMH. Furthermore, decentralization was considered a performance of duty rather than an excellent opportunity to change federal-state health relations (Elabbasi, 2003).

2.2.1.6 Decentralization and financial relations

Before federal reform, all health budgets were allocated in FMOH's budget including external grants, the constitutional order No 12 of 1994 permitted by direct transfer of resources of delivery of health service from The Federal Ministry of Finance to state budgets (Mohammed Ibrahim.M, 1996). This transfer was problematic. Generally, in developing countries, responsibilities are assigned to the lower level without resources, but what happened in Sudan was that funds were transferred without illustration of policy tasks and responsibilities at the lower level. Additionally, shortage of trained staff in many states further increased the problem (Mohammed Ibrahim.M, 1996).

The budget of FMOH was dramatically reduced from 1993-1994 which forced FMOH to look for other sources of finance (Mohammed Ibrahim.M, 1996). The FMOH tried to prevent states from generating revenues through teaching hospitals, laboratory services and import and export of valuable medicines.

FMOH also had access to other budget sources such as The National Health Insurance Fund, National Support for Free Medical Treatment, and external funds for health programs. 66% of National Free Medical Treatment was spent in Khartoum state only instead of being used to support decentralization activities in less developed states (Elabbasi, 2003). Besides that FMOH had to carry out some executive tasks that had to be done at the state level to increase financial resources, especially tasks related to externally funded programs like the National Tuberculosis program (Elabbasi, 2003, P 113).

Other problems appeared when Federal Ministry of Finance decided to centralize transfer of money to control its price in the market, so all health institutions had to transfer their income to The Federal Ministry of Finance, which transferred it back as a budget based on its estimates. This decision did not affect FMOH only but had an impact on all processes of decentralization implementation including the financial capacity of FMOH more than other ministries (Elabbasi, 2003).

2.2.2 State level

Generally, in some countries within the framework of the national policy-making process, the regional or provincial governments have a significant role. In other countries, lower levels play a limited role in policy-making. They act as a bureaucratic executive body (V. G. Mills.A, Smith.D, & Tabibaadeh.I., 1990). In a federal system, states play the major role in

planning, allocating resources, building capacity, monitoring and supervising, and delivering health service. But still it is impossible to talk about the absolute autonomy of states as it is still within the national framework of policy- making (Adamolekun, 1999; Collins.C, 2000; V. G. Mills.A, Smith.D, & Tabibaadeh.I., 1990).

In Sudan, states became responsible for social services according to The Constitutional Decree number(11) that was released in 1993 (Elabbasi, 2003, P 128). Therefore, each state concerned with planning, regulation, management and financing of service delivery according to Constitutional Decree number 12 was ordered in 1994 (Elabbasi, 2003).

Two categories of responsibilities in the public health sector were specified by the 1998 Constitution: Federal and shared responsibility between states and federal level. The division of tasks within the concurrent list of responsibilities was given to Federal Ministerial Council, Federal Government Chamber, and FMOH (Elabbasi, 2003). But they failed to do specifications of functions between federal and state levels, so it remained indistinct (Elabbasi, 2003).

The particular laws that can regulate this state-federal relation were rewritten. For example, FMOH initiated proposals for General Health Law three times in 1995,1997, and 1998 but one of them was never approved by authorities (Abdel Hameed.M, 1998). On the other hand, the constitution passed the full responsibility of deliverance of services to states citizens to states ministries of health (Elabbasi, 2003).

The expected situation when there is no clear division of tasks that each state's authority will interpret its responsibilities as it interests and this is what happened. So the main difference appeared to states as some considered themselves as subordinates to FMOH while some states were expected to be autonomy from the federal authority after decentralization (Elabbasi, 2003).

The National Health Strategy (NHS) settled as a part of The Comprehensive National Strategy of 1992-2002 to promote the PHC service to achieve health for all strategies by 2000 (Elabbasi, 2003). The NHS listed an ambitious list of health objectives without setting priorities as the financial, and human resources will not enable to meet all of them. Furthermore, these goals lack operational plans that could allow states to implementing strategies into their targets (Elabbasi, 2003). As each state became responsible for delivering

of services for their citizens, training, recruiting and of promotion of their paramedics' staffs and to operate health facilities located within their geographical boundaries (Elabbasi, 2003).

Most states were far away from achieving what they were responsible for due to widespread lack of resources and unavailability of operational plans (Elabbasi, 2003).

2.2.2.1 Policy context in the states

Policy-making in the states is influenced by several factors such as internal administrative structure and the power distribution within it, physical and human resources, and the priorities of health care in the state (Elabbasi, 2003, P 129).

During the regional government system, there was a regional ministry for social services that deliver health services with education, water, youth, sport and religious affairs. Only two regions were awarded separately; MOH (Khartoum and Central region), which will severely affect the ability of states to take the responsibility of federal reform (Elabbasi, 2003).

SMOH of Khartoum state inherited proper health infrastructure and the administrative system as well as the immensity of health professionals. It included 75% of public medical doctors, 90% of private medical personnel, and 85% of NGOs (Elabbasi, 2003). Additionally, the state was a pilot area during The Health Salvation Program of 1989, so it benefited from that. It is the only state that did not undergo division, and its staff did not decrease (Elabbasi, 2003).

Historically sub-national levels played a very limited political role as the country governed centrally from so much centralized political regimes even during periods of decentralization. Moreover, most of the political, economic and social institutions were located in Khartoum. Other states played a limited role in the high political issues and the same occurred in regards to health affairs (Elabbasi, 2003). As a result, state bureaucracy controlled the process of public policy, especially the public health policy, as health is not a priority for the state and considered a technical issue is causing a scarcity in available resources, along with negligence from both the state and federal levels (Elabbasi, 2003).

Although the financial load increased after the introduction of twenty-six states, the majority of (>75%) of national revenue was spent on the federal level, and only 25% of national revenues were left for states and localities (Eisa, 2002). Nevertheless, states were responsible for financing public health, and the majority of states did not have enough economic bases to

generate revenues. That led to low per capita expenditure 5000-60000 Sudanese Dinars (2-12 USS), with significant interstate variations (Eisa, 2002).

The federal support was so limited, causing imbalance and inequity between states as the majority of the support was gone to Khartoum state (Elabbasi, 2003). Besides the extra burden originating from a creation of new constitutional and administrative jobs, in addition to limited planning capacity of states that all led to the inability of states to develop a sound public health system at the level of states (Elabbasi, 2003).

2.2.2.2 Changes in states ministries of health structures

The new state responsibilities under the federal system after managerial, service delivery and technical duties, have been transferred from the federal level to states (Constitutional Decrees 11, 12, 14 ordered in 1993, 1994 and 1997) guided through structural changes in state ministries (Elabbasi, 2003, P 136).

Directorate of General Planning in FMOH suggested a new structure for SMOH consisting of a State Health Council (SHC) responsible for health budgeting, legislation, planning, and regulation (Elabbasi, 2003). They also included representatives from other sectors such as agriculture, animal resources, medical faculties, and education to facilitate collaboration between these areas (Elabbasi, 2003). This organizational structure was not suitable for the state level as it was copied from the federal structure, so the substantial variation between the federal and state levels in the federal system was neglected (Elabbasi, 2003). It proposed five directorates for SMOH, which are:

- 1- Curative medicine
- 2- Preventive medicine
- 3- Pharmacy and medicines
- 4- PHC, training, and health education
- 5- Administrative and financial affairs.

The FMOH's administrative role was expected to decrease while the states administrative role was supposed to increase. Besides that, the vertical program remained under FMOH and programs responsible for the state and the local level followed the federal program coordinators instead of the state and locality health authorities which affected the autonomy of the states and localities (Elabbasi, 2003).

The clear separation between curative and preventive services (although PHC was involved in both) was a big problem. There were no explicit mechanisms for coordination at the SMOH or the health system. So we can say it failed to cover the tasks of SMOH in the new federal system (Elabbasi, 2003).

2.2.2.3 Financial relations at state level

States have three sources of revenues: Internal state sources, federal transfers, and income from The United Nation Agencies and other NGOs. Internal state sources for the public health sector came from the state ministry of finance; local revenues were obtained from charged services in health facilities, and allocated health tax (Elabbasi, 2003, P 144) .

The last source varies from one state to another and wealthy ones have a sound economic base for tax revenue so federal transfer could decrease the gap between states. Federal transfers include federally allocated health funds, Federal National Preventive Health programs which include leprosy, TB, AIDS, and Malaria programs; the third one is the PHC strengthening project fund which embraces Bamako initiative, and Integrated management for childhood illness (Elabbasi, 2003).

(Elabbasi, 2003) demonstrated that the federal transfers were not able to manage interstate discrepancies and the majority of them were spent on employees' remuneration and compensation, and more seriously, these transfers were biased toward Khartoum state and wealthy states, so it aggravated the existing disparities.

2.2.3 Local level (Health Area Policy)

Critically, decisive decisions in the history of healthcare development were through WHO commitment towards primary health care in 1978 and Health For All policy in 1981 (Elabbasi, 2003, P 157). Which is related to the organization of PHC facilities as first contact for the community with the health system and the changes that happened in this level was assessed as part of community members' perspectives about the change in the utilization of health services.

In Sudan, the performance of health system has been evaluated through several studies conducted by MOH in the 1980s. These studies disclosed many limitations such as centralization of the governance structure of health system, the absence of successful leadership, little community participation, and the separation between curative and preventive

health services, and the confrontation to decentralization at the national level. Moreover, health services experienced critical resource shortages at all levels (Elabbasi, 2003).

The response to these limitations from the FMOH was the development of Health Area Policy in collaboration with Gezira University to address health system problems at the local/provincial level (Abdel Rahim, 1992). The Health Area Policy was piloted in collaboration with Gezira Regional MOH, South Darfur Regional MOH, and Gezira University. Piloting results were encouraging so FMOH ordered Ministerial Decree for national adoption of health area policy (HAP) (Abdel Rahim, 1992).

The HAP targeted to form decentralized peripheral units across the country to provide health services to local populations (Abdel Rahim, 1992). The HAP supposedly delivered an integrated health service, so vertical programs should be incorporated at the level of the locality with community participation in all details of health affairs (Abdel Rahim, 1992). The HAP covered all health facilities as well as all private, public and voluntary health personnel at the geographical boundary of the locality (Mahalia) (Abdel Rahim, 1992). Every health area should have a rural hospital with fifty to a hundred bed capacities and around it, smaller health units should offer immunization, antenatal care, nutritional support and sanitary health services (Abdel Rahim, 1992)

The idea of decentralization was embedded in HAP from the beginning, and effective health service delivery through the country can be achieved when the local government plays a key role (Elabbasi, 2003).

2.2.3.1 Administrative structure of the health area

Contains three bodies, which are:

- Health Area Management Team (HAMT),
- Health Area Council (HAC)
- Village Health Committees (VHC) (Abdel Rahim, 1992)

Each area has one HAMT, which contains seven to nine members, of which are senior health personnel at the level of the locality. The HAMT is directed by a medical doctor and his role is to maintain contact with the provincial health authorities (Elabbasi, 2003). HAC signifies community interest at the locality level and its role in maintaining democratic control over HAMT (Elabbasi, 2003). The VHC represents the community in the villages, and its roles are

to arrange plans for the support of health care workers and to mobilize the community support for the implementation of health care programs (Elabbasi, 2003).

2.2.3.2 The Impact of federal reform on the HAP

The state MOH was responsible for the following (Elabbasi, 2003):

- 1- To operationalize HAP at the state level within the FMOH's general framework.
- 2- Human, and financial resources support for health areas.
- 3- Encouraging health areas to play their role and take their responsibilities.
- 4- Health area activities supervision.

In 1995, the local government Act released, that formed local councils, which became directly responsible for health areas instead of province councils, so local councils became responsible for delivering of health services as part of social services, planning, finance and coordination. As a result health services came closer to users (Elabbasi, 2003). It was carried out in the hope that local councils become responsive to population needs as found in other experiences (Burns.D & Hambleton.R & Hogget.P, 1994; Collins.C, 2000; Mawhood.P, 1987).

2.2.3.2.1 Federal role in HAP implementation

The Federal Health Area Unit established in the PHC General-Directorate coordinated the implementation of the policy nationally (Elabbasi, 2003). FMOH developed a national plan of action and support from the WHO; the program targeted to select three or four health areas in each state, selection, training and orientation of HAMT, HAC and VHC members. Finally, fifty-seven health areas were established throughout the country; some states failed to have proposed health areas due to financial constraints (Elabbasi, 2003, P 160).

2.2.3.2.2 State support for the HAP

Again absence of a clear implementation plan in The Local Government Act of 1991 made every one of four selected states (Khartoum, Gezira, North Kordofan and Kassala) implement HAP by its approach (Elabbasi, 2003, P 164). After 1993, they followed federal reform steps. Each locality (Fifty-one in Gezira, sixteen in Kassala, twenty-seven in North Kordofan and thirty-six in Khartoum) had to form a health area, and the newly formed local councils had to

be responsible for the implementation process regarding resource allocation, staffing, accountability, capacity building, and community participation (Elabbasi, 2003).

The political context was better in Gezira than other states due to many reasons such as that the Gezira state played a significant role in the initiation of the HAP and Gezira University supported the idea, so the pilot was conducted in the state. Generally the state maintained good relations with the FMOH and external agencies (Abdel Rahim, 1992).

In Khartoum state, although it is in the best position regarding having a tremendous resources base, and best ministerial and administrative leadership, they did not trust in grass-root democracy, so they had moderate support for the HAP establishment (Elabbasi, 2003). Instead, they supported a de-concentration model of the local government act of 1971 (Elabbasi, 2003). As a result, limited resources were available for the implementation process which affected the expansion phase in Khartoum state and made it extremely slow (Elabbasi, 2003).

The development of HAP and The Local Government Act were in a top-down approach which led to ignorance of capacity of implementers as well as the socio-economic status at the local level (Elabbasi, 2003). For example, the existing eighty-seven localities were struggling with the implementation of the HAP's new acts, increasing the number of districts to 634 (Elabbasi, 2003) as its implementation was quite unrealistic. In addition, continuous changes in local laws created confusion (Elabbasi, 2003). Policies were developed by two separate central bodies without any form of coordination between them; The Federal Government Chamber was responsible for The Local Government Acts while FMOH was accountable for HAP's development that led to misunderstandings and problems in coordination and accountability at the local level (Elabbasi, 2003).

The Local Government Acts were broad enough, giving only the general framework and state authorities with no detailed plan of action. With Gezira state being an exception, no state had a definition for the role of local councils in health (Elabbasi, 2003).

The HAP and Local Government Acts did not pay any attention to human and financial resources during implementation (Elabbasi, 2003). There was no available operational budget, with the only source being the WHO and other NGOs. (Elabbasi, 2003). Moreover, the money dispensed from the local councils was not enough because most of them did not have the administrative capacity to collect that amount of cash (Elabbasi, 2003). HAP and

The Local Government Act also aggravated the power struggle which appeared in the unwillingness of the FMOH and most of the SMOH to abandon the required resources or to transfer authorities' to health areas, so they become involved in the implementation and control access to training and finance to maintain their control (Elabbasi, 2003).

The attitude of actors at the local level assisted the centralization tendency. In most cases, the local council was not involved in the process of implementation, and they lacked the capacity to manage health issues at the local level (Elabbasi, 2003). HAMT members also participated in the failure of the devolution process by favoring to contact central and state agencies for supervision and guidance more than local agencies (Elabbasi, 2003). Medical doctors also chose to contact their professional colleagues in higher government circles rather than local council members, because upward contact could bring some personal financial benefits. So we can say that, individual interest of principal actors also contributed to the failure of HAP implementation (Elabbasi, 2003).

The central nature of the regime also shaped the process of policymaking and implementation at all levels (Elabbasi, 2003). At the local level, it resulted in the lack of resources, capacities and correct orientation and interest of the local community because even local political leaders were representing themselves and not the local community (Elabbasi, 2003). Also the centralized nature of the regime led to the unfair distribution of resources between federal-state-local levels and inefficient local councils in addition to the lack of efficiency, transparent and accountable local institutions such as HAC, the VHC, and the local government (Elabbasi, 2003).

The design of HAP did not take into consideration the problems of implementation (Elabbasi, 2003). Also, the majority of actors involved in implementation believed that the policy would hurt them although HAP and the local government act did not determine means for compensation of those affected (Elabbasi, 2003).

The local community had never been involved in the process of policy development or implementation (Elabbasi, 2003). Community members did not perceive the policy as a solution for their requirements and policymaker rarely listen to them (Elabbasi, 2003). In conclusion, health areas failed to be established in local councils under their ownership so remained central regarding vertical programs and failure of federal and states to transfer resources and staffs to the local level (Elabbasi, 2003). So HAP failed to meet expectation

due to the absence of political willingness to involve the community in the determination of health priorities, and health governance (Elabbasi, 2003).

In the year 2000, Sudan adopted a different strategy for all primary health care, as the base of the health sector and accompanied user fee implementation.

After the year 2000, the Federal Ministry of Health (FMOH) and the State ministries of health, worked both on the health system strengthening and health sector development based on primary health care (PHC), in an attempt to achieve the targets of (HEALTH FOR ALL) Strategy. Decentralization aimed shifting of complete execution and implementation of promotional, preventive and curative activities to State authorities ((WHO), 2006 - 2007).

That in turn, required the transfer of financial responsibility along with executive role, putting in mind that tuberculosis (TB) services are free. The system was designed to deliver integrated primary health services through several health facilities including health centers, dispensaries and PHC units ((WHO), 2006 - 2007).

2.2.4 Conflict of interest

Conflict of interest between Khartoum state and the federal level was occurred after federal decentralization, as federal hospitals were located within the administrative boundaries of the state. In the first FMOH, the battle of 1996 was accepted, but Khartoum state did not give up and tried to intermediate to higher authorities as the economically advanced state it succeeded to reverse the situation. So the author concluded that federal-state relation had not regulated through constitution but rather the relation was prone to fluctuations according to the balance of power between Khartoum state and the federal level (Elabbasi, 2003).

Decentralization in Botswana was associated with resistance of council staff to be transferred to district health teams due to fear of losing power and influence (V. G. Mills.A, Smith.D, & Tabibaadeh.I., 1990).

In Papua New Guinea, devolution of health services was faced by resistance from senior staff members as they were against the transfer of their administrative authority to the provincial level (V. G. Mills.A, Smith.D, & Tabibaadeh.I., 1990).

In Papua New Guinea the national ministry of health remained responsible for (V. G. Mills.A, Smith.D, & Tabibaadeh.I., 1990):

- 1- All hospitals, medical, dental, nursing, preventive health and disease control services.

- 2- Monitoring and maintaining the standards of health care services.
- 3- Pharmaceuticals services.
- 4- Specialist medical services.
- 5- National health planning, formulation of the policies, and evaluation.
- 6- National health legislations.
- 7- Medical training of health workers.

In the Papua New Guinea, the national hospital of the country was listed under the central MOH as the national hospital; other hospitals were transferred to lower levels. But within five years also the second largest hospital was returned to central MOH due to failure of the states to meet the maintenance requirements of the hospital (Thomason.J. W.H.Barnum. and R-L.Kolehmainen-Aitken, 1991).

2.2.5 Stakeholders resistance

Regional health team/health workers were resistant to the process of decentralization due to their doubts about the loss of benefits, pensions and opportunities of promotion. Furthermore, opposition has occurred from officers in the civil service and citizens because councils were not ready to address the health service delivery responsibility (V. G. Mills.A, Smith.D, & Tabibaadeh.I., 1990).

2.3 Decentralization and access to health care services

In Ghana, decentralization has been associated with an increase in access to healthcare services due to the increase in the availability of health facilities (Kwoyiga, 2010), and the decrease of the distance of facilities from home to 5Km (Anokbonggo, Ogwal-Okeng, Ross-Degnan, & Aupont, 2004) (Anokbonggo, Ogwal-Okeng, Obua, Aupont, & Ross-Degnan, 2004; Masanyiwa, Niehof, & Termeer, 2013). Moreover, another study in Uganda has found that decentralization was associated with the nearness of health services to the community, it's involvement and their sense of ownership which led to improvement in the patient-provider relationship (Anokbonggo, Ogwal-Okeng, Ross-Degnan, et al., 2004).

Even policies that have been implemented to increase utilization of service like the exemption of fees for vulnerable groups could not achieve the purpose due to problems in

implementation as well as inadequate funding (Kwoyiga, 2010). Furthermore, inappropriate working hours of healthcare facilities was another barrier to accessing the health care service after decentralization implementation in Ghana (Kwoyiga, 2010).

2.3.1 Affordability of health services

Decentralization was associated with an increase in self-treatment and delay in treatment due to deficient funds of user fees (Anne_Emanuelle Birn, 2000)

Some researchers disagreed with this finding, based on evidence of literature from Senegal and Cameroon which has revealed that introduction of user fees was accompanied by the increase of utilization due to improvement of healthcare service quality (Cheshire, 2010).

The introduction of user fees has compelled new barriers to accessing health care which led to the decline in the utilization of health care service in Nicaragua (Anne_Emanuelle Birn, 2000).

2.4 Decentralization and quality of health services

A study in Tanzania has found that decentralization has made some achievement along with the construction of new health facilities, but did not do a lot to improve the quality of service (Masanyiwa et al., 2013). Also, in Ghana study participants perceived decentralization as new buildings that have nothing to do with quality of health care service (Kwoyiga, 2010).

(Riita-Liisa Kolehmainen-Aitken, 1999) argued that decentralization could have an overwhelming effect on quality of services through its effect upon the morale of health workers. When work conditions deteriorated along with the health workers' situation, this had a direct effect on health workers' motivation and the quality of the delivered service.

2.4.1 Treatment abroad

About 5% of the populations (wealthy) in Nicaragua are seeking health services outside the country after the implementation of decentralization (Anne_Emanuelle Birn, 2000).

2.5 Job satisfaction

2.5.1 Human resource for health management under decentralization

The effect of decentralization on healthcare providers regarding their social life and professional career changes has received little attention (David Kyaddondo and Susan Reynolds Whyte, 2003; Riita-Liisa Kolehmainen-Aitken, 2004). Some studies were done to

look at changes that happen in the performance of health care providers before and after decentralization (Asenso-Okyere WK, 1999) ,or the obstacles that emerged after decentralization in the human resource management (Saide MAO, 2001).

More precisely about how the healthcare sector reform affected the healthcare workers motivation and willingness to work being satisfied (Masanyiwa et al., 2013). The level of healthcare worker satisfaction is an important determinant of the health system performance and has a critical effect on quality of healthcare service (Masanyiwa et al., 2013).

Decentralization may have the potential to fragment the human resource system by transferring the authority for maintaining staff records to decentralized units that did not have a system or skills. Moreover, transfer of healthcare workers from one decentralized unit to another may require a resignation with the loss of benefits (Riita-Liisa Kolehmainen-Aitken, 1999).

The human resource planning was already weak before decentralization in many developing countries but worsened, due to focusing on numbers of health staff more than their distribution, qualification, motivation, development and other issues, not paying any attention to the decentralized system (Bach S, 2002).

Although stakeholders in Uganda claimed that the quality of health care services is likely to be improved since staffs have been trained (Anokbonggo, Ogwal-Okeng, Ross-Degnan, et al., 2004)

The transfer of authority and responsibility always affects the healthcare workers and their way of management (Riita-Liisa Kolehmainen-Aitken, 2004).

Cutting off of travel allowance after devolution led to a direct effect on supervision missions because the supervisor had to pay out-of-pocket to cover supervision expenses which had consequences on both health staff morale and distribution of drugs, supplies, and equipment (Riita-Liisa Kolehmainen-Aitken, 1999)

2.5.2 Organizational factors: decentralization and work conditions

2.5.2.1 Employment terms and job security

In Uganda, the research about the effect of decentralization has found that even on paper, a clear condition has been put to hire health workers under clear terms and conditions of work

(David Kyaddondo and Susan Reynolds Whyte, 2003). But at that level of practice, many health workers were appointed, with an unclear job description, which led to unequal salary distribution, using different scales of payment for staff members doing similar work (David Kyaddondo and Susan Reynolds Whyte, 2003). Furthermore, there are problems in the promotion system as some employees were not promoted for 30 years while some of them were promoted without any change in their salaries (David Kyaddondo and Susan Reynolds Whyte, 2003).

There is evidence of the literature from South Africa that has noted that decentralization was associated with a high level of job insecurity due to a lack of clarity about how decentralization will change health staff life (Gilson.L. R.Morar. Y.Pillay. L.Rispel. V.Shaw. S.Tallman. and C.Woodward, 1996)

(Bossert & Beauvais, 2002) emphasized that health workers work conditions, have deteriorated after devolution, as salaries decreased by a fifth and the healthcare worker's promotion system was interrupted as a result of fragmentation of the public health sector.

Healthcare staff remuneration has been affected in the decentralized system and with the economic instability of developing countries leading to a delay in staff payment and low salaries. In addition to the appearance of an individualized pattern of remuneration, especially when decentralization has taken the form of privatization with the introduction of the market economy in health like in Western European countries (International Labour Organization, 1998).

Decentralization has been accompanied by different remunerations for the same work in different decentralized units as in the case of China where staff working in state facilities and devolved facilities are paid differently (Tang SL, 1994). The experience of the Philippines illustrated that there was a decrease in salaries of devolved health staff in early years of devolution (Bossert & Beauvais, 2002). Also, the same issue happened in Uganda where some salaries are determined centrally while others benefit locally (Okounzi S, 1995). Furthermore, in South Africa, there is a difference in the salaries of the different devolved units which has been noticed because salaries are determined locally (Riita-Liisa Kolehmainen-Aitken, 2004).

The pension also has been affected after decentralization in Zambia where the local authority refused to pay for the pension that was being paid by the central government (Riita-Liisa

Kolehmainen-Aitken, 2004). In Jamaica, a private pension scheme which constituted from the regional health authority and individual employees replaced the pension scheme that was paid totally from the central government (Riita-Liisa Kolehmainen-Aitken, 2004).

Delay, or nonpayment of the salary for healthcare staff after decentralization in developing countries, as well as in the Central and Eastern European countries. Which occurred more frequently in cases of devolution, where healthcare staff either received a complete salary or did not receive a salary for months (Bossert & Beauvais, 2002; Kolehmainen-Aitken R-L, 1999).

(Wang Y, 2002) states that there is little evidence from low and middle-income countries that emphasize the role of decentralization in the formation of new job posts and job re-profiling due to a highly centralized civil service that did not have the power of creation of new jobs to local managers. Or due to an insufficient budget even if they have this power, in addition to weakness in human resource planning as authorities have been transferred without adequate training for local managers. Also, the same previous study has pointed out that decentralization is implausible regarding the transfer recruitment and hiring at the local level (Wang Y, 2002).

Centrally controlled human resource budget and regulations also prevent local level managers from recruitment of new employees (Kolehmainen-Aitken R-L, 1991; B. S. Mills.A, Russell S, 2001). Moreover, poorer districts could suffer more to attract qualified staff and to retain them leading to variations in quality of delivered services between different localities and provinces which justifies why decentralization is associated with intra-regional inequalities (Gong YL, 1997).

Decentralization attracts inequality of staffing due to variations in resources and managerial capabilities between decentralized units, so more wealthy units will attract more qualified staff leading to further widening in the gaps between decentralized units (Riita-Liisa Kolehmainen-Aitken, 2004).

2.5.2.2 Health workers' performance and productivity

Involves assessment of the system of staff performance as well as the availability of work aids and supplies, and how they changed after the implementation of decentralization.

In some countries, decentralization has reduced the availability of drugs, work aids, and transportation that affected the performance of healthcare providers which were caused by budget cuts that are associated with decentralization (Newbrander.WC, 1991; Perez.J, 1995).

Healthcare providers perceived that decentralization negatively affected their salaries and working conditions, due to a lack of consideration of working hours and working condition. Which in turn had long term consequences on healthcare workers morale (Bach S, 2002).

(Riita-Liisa Kolehmainen-Aitken, 1999) argued that because decentralization is inequitable by its nature so when there is the inequitable distribution of a drug management system before decentralization, the poor districts worsened after decentralization.

The procurement of drugs and supplies became difficult under decentralization, and that is (Riita-Liisa Kolehmainen-Aitken, 1999) argued from the early manifestations of decentralization, because hospitals have little control over procurement, storage, supply or transportation of supplies. In the Philippines, no modification has been done to the governmental supply system after decentralization which forced districts to use the old poorly equipped procurement system, causing drugs and supplies to be frequently out of stock (Perez.J, 1995).

In the Philippines after implementation of devolution, the immunization coverage has declined from 85% to 80%; vitamin A distribution program coverage also declined in addition to health workers demoralization (Hume.M.R-L.Kolehmainen-Aitken.E.Villa and T.Vian, 1996; Perez.J, 1995).

2.5.2.3 Training and professional development

(Biscoe G, 2001) argued that the human resource strategy should be organized centrally to be able to respond to dangers that face the human resource stabilization issues and mainly the migration of qualified staff, furthermore, inadequate training from private universities that replace public universities in the training capacity.

Health workers stated lack of improvement in training opportunities after decentralization. The cause of the deterioration as mentioned in the study is the inability of districts to fund training programs (Riita-Liisa Kolehmainen-Aitken, 2004). Additionally, healthcare workers observed a decrease in workshops and seminars after decentralization due to lack of resources

and poor coordination between the center and district (Riita-Liisa Kolehmainen-Aitken, 2004).

2.5.2.4 Regulation of professional training and practice

The central government is responsible for regulation of training programs, in close collaboration with professional associations, becoming more important in countries where there is a rapid growth of private institutions, that work in higher education training (Riita-Liisa Kolehmainen-Aitken, 2004).

The legal protection of staff has been threatened with decentralization, which led to the emergence of many critical questions about protection of staff from unfair hiring and malpractice. Are local levels able to protect the staff as the central level was doing (Riita-Liisa Kolehmainen-Aitken, 2004).

2.5.2.5 Staff Morale

Decentralization was associated with staff corruption in Uganda due to poor payment (Anokbonggo, Ogwal-Okeng, Ross-Degnan, et al., 2004). That also has been found in Tanzania which affected the quality of healthcare service and so utilization of service (Masanyiwa et al., 2013). Also, corruption of local leaders in Uganda has emerged in the literature as the local council diverts funds from health projects and practices nepotism (Anokbonggo, Ogwal-Okeng, Ross-Degnan, et al., 2004).

2.5.2.6 Perceptions of change in the budget after decentralization

Decentralization in Nicaragua was associated with financial cuts by 12 % between the years of 1992 to 1996 (Anne_Emanuelle Birn, 2000).

Under decentralization, the financial control authority was transferred to the local level which usually lacks the capacity of financial management (Riita-Liisa Kolehmainen-Aitken, 1999).

Hospital finance management also differs largely from one country to another. In Gambia, hospitals have the right to set their user fees and retain collected revenue, while in Kenya user fees determined centrally; whereas 25% of collected revenue is given to district health authorities (Riita-Liisa Kolehmainen-Aitken, 1999).

In Uganda, the available literature has raised the concern, that the budget has decreased and the allocated budget for primary health care has decreased, with the devolution of health care

service due to the bias of health toward the hospital and curative care (Bossert & Beauvais, 2002).

(Loehr, 1999) emphasized that although decentralization of fiscal responsibilities to local governments but the public health sector finance remained centralized due to its highly dependent on central government transfers (Bossert & Beauvais, 2002)

There is inequality in fiscal allocation between different levels of local government, as city and barangay governments benefited the most from the devolution whereas provincial and municipal government suffered losses from the fiscal allocation of devolution (Bossert & Beauvais, 2002; Miller, 1998).

The successful implementation of decentralization was hampered in all developing countries by constraints in financial, human and physical resources (D. A. Rondinelli, 1983).

The majority of financing of the healthcare service remained centralized through the national MOH and then later transferred directly from the national ministry of finance to the provinces due to the undue influence of national ministry of health in the budget allocation (V. G. Mills.A, Smith.D, & Tabibaadeh.I., 1990).

Stakeholders in Uganda perceived decentralization has associated with inadequate financial support from the Center (Anokbonggo, Ogwal-Okeng, Ross-Degnan, et al., 2004).The same finding also has been found in the decentralization experience in China that the decentralization was launched with the aim to decrease the healthcare budget. In fact, this has occurred, because decentralization in China was accompanied by the decrease in health expenditure by 17%, which led to an increase in taxation and privatization of services for financial revenue. This, in turn, has led to the extreme privatization of services in the public institution and thus the dramatic increase in the cost of treatment and decrease in utilization of healthcare service (Cheshire, 2010).

The experience of devolution in the Philippines was associated with a gap in the financial support between the cost of devolved personnel and facilities to the provinces and the revenue allocated at the provincial level due to cutbacks that happened in the funding of healthcare services (Riita-Liisa Kolehmainen-Aitken, 1999).

2.5.2.6.1 Maintenance budget

The maintenance of the buildings, equipment and facilities is done through national MOH for hospitals that are delegated to the provinces, and provincial governments were responsible for the maintenance of health centers. Due to the inability of provincial to keep the maintenance cost the responsibility of all facilities maintenance has been transferred to the national level (V. G. Mills.A, Smith.D, & Tabibaadeh.I., 1990).

The maintenance of health facilities and their equipment is also transferred to decentralized units but most likely without corresponding financial resources, so local authorities are not eager to allocate adequate resources for maintenance of facilities (Riita-Liisa Kolehmainen-Aitken, 1999). The same problem emerged in Papua New Guinea where x-ray machines, ultrasound scanners, and centrifuges were not being repaired promptly due to lack of maintenance (Thomason.J. W.H.Barnum. and R-L.Kolehmainen-Aitken, 1991).

2.5.2.7 Perceived changes in the health system

2.5.2.7.1 Changes in the administration

Some form of centralization occurred in the provinces in Papua New Guinea experience because responsibilities were concentrated at the level of provinces and had not devolved further to the level of districts (V. G. Mills.A, Smith.D, & Tabibaadeh.I., 1990).

From the advantages of decentralization in Nicaragua that it has improved the financial allocation and administrative efficiency at the local level (Anne_Emanuelle Birn, 2000).

Decentralization in Nicaragua has brought about the fragmentation of the referral system (Anne_Emanuelle Birn, 2000).

2.5.2.8 Strengthening of the private sector

(Kolehmainen-Aitken R-L, 1999) argued that uncertainty of health staff about their professional future, might force them either to look for a new job, in the private sector or to seek employment overseas.

Decentralization in Nicaragua has been accompanied by the creation of separate private hospital wards inside public hospitals (Anne_Emanuelle Birn, 2000).

There is a growing number of low-income groups who left the public sector to seek service in the private sector in Latin America after implementation of decentralization (Anne_Emanuelle Birn, 2000).

(Anne_Emanuelle Birn, 2000) argued that free market and privatization agenda has been masked under the decentralization of healthcare services.

2.6 Structural Adjustment Program and health

In 1987, The World Bank has released a policy study about the financing of health services in developing countries, which included the following points:

1. Implementation of user fees in the public health sector
2. Establishment of private insurance companies
3. Provision of services through NGO's including health service
4. Decentralization of governmental services (World Bank, 1987).

(Gershman J, 2000) demonstrated that the international financial institution (IFIs) gave loans and debts to countries when they fulfilled certain conditions. Governments had to reduce their public workforce, decrease remaining salaries, reducing budgets for the public sector, to dwindling of the governmental environmental and labor regulations, and deregulating the movement of capital, with the interest rates of loans becoming the primary source of economic growth (J. P. a. R. Chapman, 2010).

Moreover, (Bossert & Beauvais, 2002; Riita-Liisa Kolehmainen-Aitken, 1999) emphasized that decentralization accompanied broad economic and political reform packages such as the implementation of economic liberalization and structural adjustment programs in many developing countries.

(David Sahn, 1995) argued that decentralization has been implemented as a policy and institutional reform of the structural adjustment program, including the implementation of essential drug programs, cost recovery and user fee.

David Sahn (1995) also argued that it is impossible to see decentralization as a neutral reform, and it will be improved with tinkering when it is being implemented in countries undergoing SAPs.

Although the term Structural Adjustment Program was established in the 1980s, it is commonly interchanged with globalization and neoliberalism (Harvey, 2005). SAP is known as, practical procedures used by international funding agencies like the International Monetary Fund (IMF) and The World Bank to promote the free market economy and neoliberalism (J. P. a. R. Chapman, 2010). SAP denotes to country - specific conventions resulting from negotiations between the IMF or World Bank and local ministries of finance which had visible impacts in The Third World socially, economically and politically (J. P. a. R. Chapman, 2010, P 150). The primary beliefs of neoliberalism are that SAPs are trying to pave their way through IMF, and The World Bank are the promotion of free market, privatization, small government and economic deregulation (J. P. a. R. Chapman, 2010).

Structural adjustment program packages are composed of three policy components, which are:

- 1- Expenditure- reducing strategies: reduction of public spending on demand components to reduce the budgetary deficits and shortfalls in the external balance.
- 2- Expenditure-switching policies: to shift resources to investments from sectors of consumption and non-tradable goods (Suliman, 1997).
- 3- Institutional policy reforms: involves trade liberalization, and restriction of the state's role in the economy, etc. (Cornia, 1987). The main shortcoming of these systems is that it does not take different contexts into consideration (same prescriptions regardless of context). They are contradictory strategies, as they include demand management policies. Furthermore, government spending on goods and services has to be reduced and redirected towards health and education which are the most heavily affected sectors (Suliman, 1997).

Structural adjustment participated in the concentration of budgetary allocation towards curative/hospital care and negligence of preventive/primary care, which is the case in most countries under SAP like Côte d'Ivoire, Ghana, Uganda, Madagascar, and Senegal (David Sahn, 1995).

2.6.1 History of SAP in Sudan

The idea of SAP emerged with the economic crisis that took place in the 1970s (Suliman, 1997).

In 1987, the WB promoted greater dependent on the private sector and less involvement of the public sector in the delivery of health care in developing countries (Akin et al., 1987).

In 1987, the World Bank released world banks financing for health services in developing countries. That created the emerging strategies by the introduction of the user fee for governmental facilities, and private insurance. NGOs and private enterprises were persuaded to provide services, and decentralization of public utilities took place (J. P. a. R. Chapman, 2010). By 1991, 75 countries received adjustment loans, including thirty countries in Africa and eighteen in Latin America. Sudan was part of those countries (Gershman J, 2000).

In 1993, the WB approved a selective PHC package instead of the comprehensive package of Alma-Ata declaration. This selective PHC package restricted the public service delivery in basic package for poor, while the comprehensive service delivery has transferred to the private sector (World Bank, 1993). In Argentina also, the empowerment of private sector has been noticed in the form of fragmentation of public health sector and the comprehensive of the private sector (Victor B. Penchaszadeh, 2010).

(Suliman, 1997, P 18) showed that regardless of the lofty aims behind the introduction of user fees, such as improved service quality, the real reason behind it was to fill the gap that emerged when the state withdrew from supporting health.

The first time Sudan applied to the SAP was in 1978 to 1986. In 1989, a new regime came to power through a military coup. A national conference took place, held by the new government, for economic salvation, to reform and liberalizes the economy. In 1992, the government started to execute the outcomes of that meeting and began to free up the economy (Suliman, 1997).

In November 1990, a seminar was held that canceled the free health system and inserted a cost-sharing mechanism instead. As the manager of Sudanese Central Medical Supplies (CMS) claimed in his paper (Mohamed, 2008), the first step after application of user fees toward privatization of health services, was to meet World Bank policies by the privatization of non-medical services like catering services, security, and cleaning. The same author supported his arguments to privatize CMS by the government's positive experiences in the privatization of public enterprises such as telecommunication, Sudanese free zones, markets, and Bank of Khartoum. The previous author emphasized that according to Sudan's privatization policy), the government was aiming to transfer activities vested within the

government to the private sector. As part of the reform process the CMS that produced and distributed free medicines and other medical supplies from 1937 until 1991, was transferred to an autonomous medical supply agency and named CMS Corporation and worked on the cash-and-carry basis (Mohamed, 2008).

2.6.2 Impact of SAPs on health

The impact of SAPs on health was caused by a combination of cuts in the budget of the public health sector, the annoyance of user fee implementation, and decline of income and dismissal of public sector workers. The result was a worsening in the social determinants of health. (Breman A, 2007).

Per capita GDP in 1993 was greater than that of 1987 by 21.6. Health expenditure per capita deteriorated from 1.4 SDG in 1986/87 to 0.24 SDG in 1993/94. So the justification that spending decreased due to the limitation of resources does not make sense (Suliman, 1997). Moreover, the health-spending drop was associated with SAP was seen in a number of the countries. In Sri Lanka, it decreased from 33% of GDP to 20% in 1977, and in Jamaica, health expenditure declined by 33 % in 1980 (Suliman, 1997, P 13).

Utilization of hospital care fell because of deterioration in the quality of services with increased prices so; patients prefer private clinics in spite of high prices. The high costs affected the health service, altering patient behavior. Up to 41% of study participants claimed they seek medical care up to a week after developing symptoms. (Suliman, 1997). The cut in the budget negatively affected the hospital care, leading to decreased utilization (the number of in-patient shrank by 20%) and poor infrastructure due to lack of maintenance of budgets (Suliman, 1997). The quality of service deteriorated and became inadequate under SAP as typically found in Mozambique (R. Chapman, 2003).

The compensatory mechanisms proposed to poor people, failed to solve the problem as the budget was inadequate for 50% of the patients in Khartoum and Omdurman teaching hospitals (Suliman, 1997, P 40).

Unavailability of drugs was reported by 40% of patients as the cause of perceived inadequate quality of service. Which resulted from a scanty cost recovery mechanism to provide enough funding for hospitals, having to pay for drugs via CMS by the market price (Suliman, 1997).

(Towghi, 2004) reported that with the SAP, they faced difficulties in establishing traditional birth attendance, as the referral system for complicated pregnancies disappeared in Pakistan. Pfeiffer claimed, that increase in the number of NGOs fragmented the public health sector, as health staffs escaped to NGOs due to the higher salaries (Pfeiffer J, 2003). (Comaroff, 2007) also demonstrated how SAP and neo-liberalism aggravated the social conditions that thrust the HIV epidemic and damaged public infrastructure needed, to develop a treatment for AIDS in developing countries. (Schoepf, 2001) and (Castro, 2006) revealed how inequality and economic insecurity caused by SAP preserved HIV transmission and reduced adherence to treatment due to the user fee and lack of food. (Leatherman, 2009; Uvin, 1998) Leatherman described how inequality caused by the SAP was grounds for the 1994 Rwandan genocide and political violence in Peru.

2.7 Theoretical foundation

This study uses the analytical framework that has been developed by (Grindle. M, 1980) for the analysis of the public policy implementation. This analytical framework suggests that the implementation is a complicated process and not just an easily execution of the policy orders and programs. Many policy-makers and actors in the implementation process considered the implementation as a technical or administrative process. But (Grindle. M, 1980) argues that implementation is a socio-political process that means not only that the policy shapes the implementation. Also that the implementation shapes the policy and its contents and consequently affects the policy consequences and long-term impacts. So the implementation is described as the most crucial step in the policymaking process.

In developing countries, the implementation and the characteristics of the political regimes in which policies are being implemented have often been ignored; no plans, no resources for the implementation and thus, most likely, the policy does not achieve its objectives.

Griddle's model of implementation is concerned with the content of the policy and its effect on implementation, and the effect of the context on the implementation process. So this model perceives the implementation as a continuous process of decision making by the actors. And the consequences of the implementation are determined by the contents of the programs being conducted and the interaction of the decision makers within a given context. The implementation of the policy is achieved through the implementation of specific programs and projects that transfer policy from the level of the theory into practice. When there is difficulty in the implementation of the policy, the feedback from implementation may

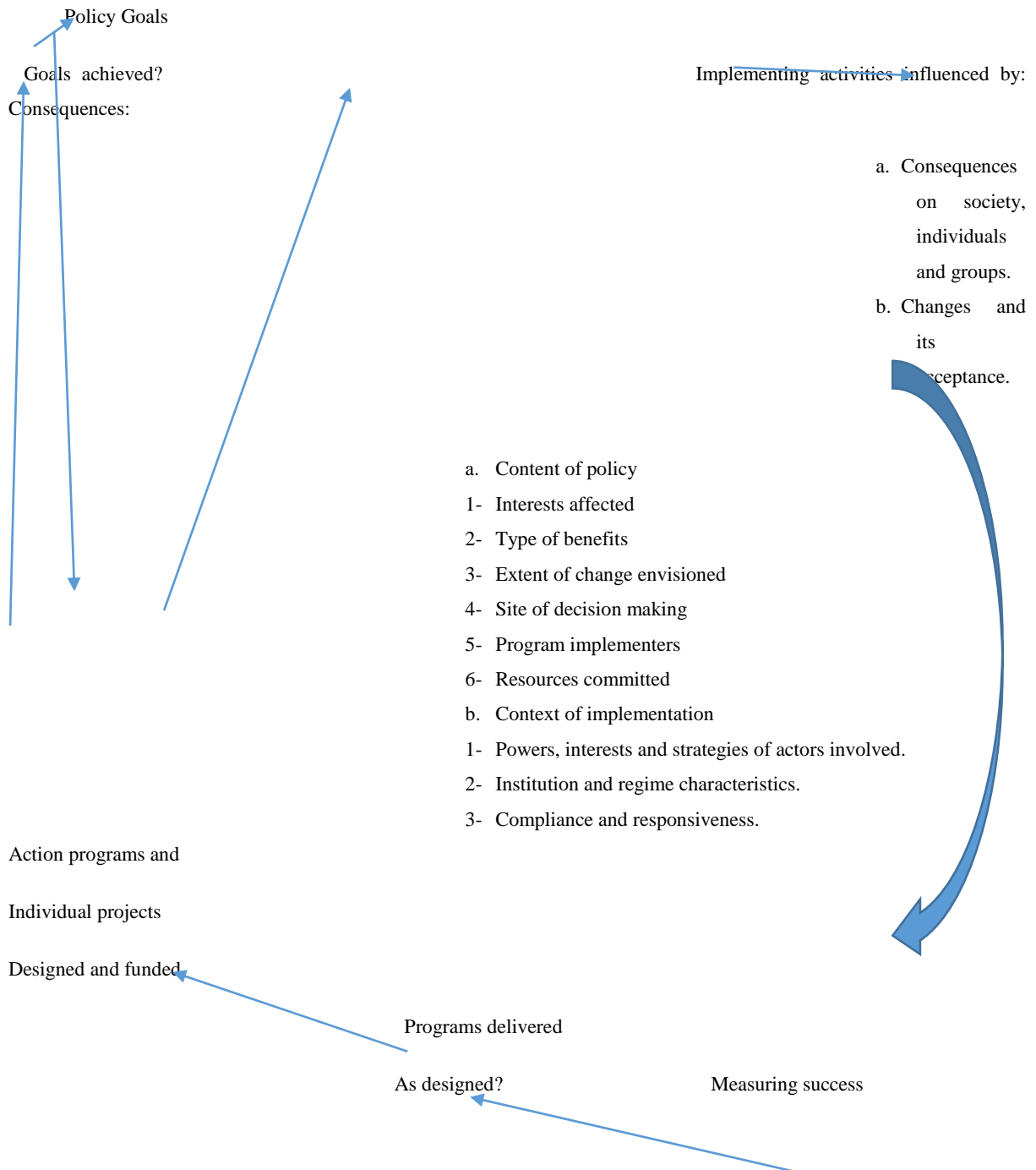
lead to either change in the policy goals or interpretation or reinterpretation of the policy contents and goals.

Moreover, the content of the policy also affects the implementation. For example, the redistributive policies that disturb the distribution of power and resources between the interest groups such as (decentralization) are difficult to implement to stimulation of opposition from groups their interests will be threatened. Also, policies that require a behavioral change from its beneficiaries take a long time to be materialized and are more difficult to implement.

A decision made during policy formulation about who will implement the policy, can also affect the implementation due to the variation in the managerial capacities. In addition to the statement of goals and objectives of the policy if clear or not, and the agreement between actors about the policy goals can facilitate the process of implementation. The context within which the policy is being implemented including the nature of the political regime in the power, the power relations of different actors and their interests, as well as the outcome of other programs and policies. So programs, which are similar in their contents, may be implemented differently in different contexts.

Figure 6 Implementation model as politico-administrative process (Grindle. M, 1980)

Source: Politics and policy implementation in the third world (Grindle. M, 1980).



3. RATIONALE

Although there is a claim that decentralization improves the access, quality, and equity of healthcare service, the exact effect of the decentralization on the performance health system is still poorly understood (Riita-Liisa Kolehmainen-Aitken, 1999)

Decentralization may have many advantages such as focusing attention on communities by transferring authority nearby, which encourages the provision of service in a more equitable manner and promotes inter-sectoral collaboration. Unfortunately, despite these advantages, there are corresponding disadvantages. Moreover, the same degree of authorities transference may work differently in different countries because many factors other than the institutional factor may affect decentralization (V. G. Mills.A, Smith.D, & Tabibaadeh.I., 1990)

(Rondinelli, 1981b) stated that decentralization could be prone to constraints which produce undesired consequences; this can be explained by a wide range of decentralization effects from service delivery to poverty, as a result of transference of public resources (Olowu.D, 2001).

(D. A. Rondinelli, 1983) has emphasized that literature from developing countries proved that decentralization had not achieved the objectives for which it has been implemented nor is it necessarily more cost effective than centralization. Moreover, the same factors that make decentralization attractive are the same that make its implementation difficult.

(Bossert & Beauvais, 2002) explained that the empirical data about health reform and decentralization in developing countries has explained that the limitations of the reform led to reactions against the reform packages.

In Sudan, only one study has been conducted about the implementation of federal reform and its impact on the public health sector (Elabbasi, 2003). In addition to another study about the decentralization of TB health services (Elsony, 2003). No study has been conducted about the implementation of devolution of healthcare services and the consequences of that implementation on the access and quality of service as well as job satisfaction of health care providers.

Devolution of healthcare service has therefore raised a number of research questions driving this study, which are:

- Can devolution work in any setting to achieve its goals, when there are unequal development and distribution of human and financial resources between the center and peripheries, and with few civil organizations to facilitate community participation?
- How will the devolution be able to affect a citizen's affordability of service at the state level of hospitals according to healthcare service consumer's perception?
- Will devolution improve access to health care services?
- How will the degree of job satisfaction affect devolution implementation and how will the devolution affect the level of job satisfaction of health workers?
- What are best conditions to be in place in order to address the increase in utilization of health services and job satisfaction of health workers with the implementation of devolution policy?

In order to address these knowledge gaps, this study is about the perceptions of community members, health care providers, policymakers, and NGOs members on the effect of devolution on the utilization of health services and job satisfaction. That was carried out by several methods including, in-depth interviews, questionnaire interviews, and analysis of routine data.

4. OBJECTIVES

4.1 General Objectives

- ✓ To describe the process of devolution implementation and health service users, and providers' perception of its effect on utilization of service, quality of service and job satisfaction.

4.2 Specific Objectives

- ✓ To explore the process of devolution implementation in Khartoum locality
- ✓ To assess changes during devolution implementation on access to health services.
- ✓ To explore changes during devolution implementation on quality of health care service.
- ✓ To explore changes during devolution implementation on job satisfaction of health workers.

5. Methodology

Process evaluation: is also known as formative evaluation, it is conducted while the implementation of the policy or program in progress. Aiming to realize deficiencies and successes of the intermediate phase (short-term consequences) of the given program or policy. Furthermore, it gives continuous evaluation for the program or policy under the process of implementation (Kirch, 2008).

This study is interested in the process evaluation, to explore community members, health care providers, NGO's representative, and policymakers' perceptions about the process of devolution implementation; about the actors that have been involved; and available resources and how they have been allocated. Furthermore, the consequences of the process of implementation of devolution on job satisfaction and utilization of health care services. We know it is impossible at this time to evaluate the impact of the policy, as the time is not enough for the policy impact to be materialized.

5.1 The Study Design

(C.R Kothari, 2004) defined methodology, as the steps that are systematically used by the researcher to address a research problem, including research methods, techniques, and reasons for choosing the specific methodology.

This study uses a combination of household based survey and in-depth interview to explore study participant's perceptions about the process of devolution implementation and consequent change in utilization of health services and job satisfaction.

5.2 Rationale for choice of methods

The study will answer one research question (perceptions of change in utilization of healthcare service) using both qualitative and quantitative methodologies. While two research, questions will be answered using qualitative methodology

The combination of both qualitative and quantitative methodologies is known as methodology triangulation or multi-method research (Dahlgren et al., 2007). The qualitative in-depth interview is suitable for an in-depth understanding of perceptions, experiences of the study participants (Dahlgren et al., 2007). Therefore, it enables me, from an in-depth understanding of the steps of devolution implementation as perceived by the study

participants and consequences of the implementation process on the utilization of health services, and the job satisfaction of health care providers.

Using both qualitative and quantitative means variation in view of the reality and process of knowledge production leading to the greater validity of study results (Caroline Bulsara, 2014).

(Caroline Bulsara, 2014) argued that using a mixed method approach in research, to answer questions from different perspectives, to minimize gaps in the collected information or data. Furthermore, it is used when one methodology does not generate the required knowledge to answer the research question.

Mixed methodology gave me different views of reality and knowledge production as well as perspectives to highlight on the perceptions and experiences of change in utilization of health care services as a consequence of the implementation of devolution.

5.3 The Study Area

The Study was conducted in Khartoum state- Sudan, which is composed of urban, suburban, rural, and IDPS (Internal Displaced persons) populations, one locality, which is (Khartoum locality), has been selected out of seven total localities. Because devolution was implemented in the Khartoum locality to a greater extent than other localities when Khartoum teaching hospital and Jafar Ibnoaf hospital for pediatrics have been transferred regarding health workers and service delivery responsibilities to two district hospitals, two of them in Khartoum locality (Alacademy and Ibrahim Malik hospitals). Khartoum locality is surrounded by White Nile, Blue Nile, the confluence of White and the Blue Nile at Elmogran, Khartoum North locality from North, Jabalawlia locality from south and Sharqelneel locality from the east. It is constituted from three administrative units, and every unit contains popular administrative units (PAU).

5.4 The Study Duration

Data was collected from July to December 2015. Data entry, analysis, and thesis writing were conducted from January to September 2016.

5.5 Population and Sampling

5.5.1 Target population

All household heads that are living in the Khartoum locality, and health workers working in hospitals of Khartoum locality.

5.5.2 Study population

All household heads that are living in the Khartoum locality, and health workers working in four hospitals of Khartoum locality.

5.5.3 Inclusion Criteria

1. Household heads or the nearest relation to them in Khartoum locality which include males, females, adult aged 18 years above.
2. Health workers (Medical doctor, nurse, lab technician, pharmacist and administrative staff). Who were working in Ibrahim Malik and Alacademy hospitals and Khartoum and Jafar Ibroaf referral hospitals, policy makers, and NGOs representatives and experience the change before and after devolution.

5.5.4 Exclusion Criteria

1. Other family members in the household.
2. Health workers working in other health facilities of the Khartoum locality.

5.5.5 Sample Size

The total population of Khartoum state is 5,274,321. The total population of Khartoum locality is 661,617. A sample of 418 participants was calculated and then distributed to the locality based on numbers of households and population in the locality. The locality was then divided into formed clusters that constituted of 15 households. Clusters were then selected from the Khartoum locality.

5.5.5.1 Quantitative part

A number of assumptions were made to fit the most precious sample size. Taking a 93% confidence interval and a variance of 0.25 by assuming that people in the target population have an equal chance to access the health services ($p=0.5$). The precision was assumed to be 0.07 and this will give us the most accurate sample size.

Sample size was calculated by the following formula:

$$N = Z^2 PQ/E^2$$

$$N = ((1.81*1.81) *(0.5*(1-0.5))/ (0.07*0.07)$$

Z: is the statistic for level of confidence 93% that is equal to 1.81

P = Expected prevalence

$$Q = 1 - P$$

E: Margin of error

By taking a confidence interval of 93%, margin of error of 7%, and assuming the prevalence of 50%, then the sample size is equal to 167 participants using the above equation.

By taking a design effect into consideration, that means sample size* 2 which is equal to 334

For the non-response rate, a sample will be adjusted to 418

5.5.5.2 Qualitative part

69 Health workers (30 medical doctors, six nurses, seven lab technicians, nine pharmacists, four statisticians, and nine administrative staff), were recruited from two district hospitals and two referral hospitals. They were selected randomly from a health workers list of four hospitals. Furthermore, purposive sampling was used to select 31 community members, two policymakers, and two NGO representatives.

5.5.6 Sampling Technique

Civil registration in Sudan is not 100% reliable, so participants should not be selected via simple random sampling. Three stages stratified cluster random sampling, using up to date sampling frame were used as the following:

The Khartoum locality was selected on purpose because devolution has been implemented there to a greater extent.

Stage1:

The target of the study in the household is, the heads of the household, or nearest relation, so 418 households were visited, and this total number of HHs is distributed through the locality according to household weight in each cluster (area) as in the following:

Clusters were formed in the locality to cover 15 households per each. Then the locality was divided into the above-formed clusters as follow:

The weight of cluster (number of HHS in each cluster) = 15HHS

The total number of clusters = $418/15 = 28$ clusters.

Stage 2:

Sample interval was determined as following:

Sample interval = Total number of Cumulated HHS/total number of clusters

286589

Random start = first start + interval

First start = Interval * RAND (0-1) = 13297

Random start = 19522

Then 28 popular administrative units (PAU) (clusters) were selected randomly by up to date sampling frame.

Stage 4:

- ❖ To determine households that will be selected in each (PAU) (cluster), blocks or villages that constitute the area were selected firstly by random selection from the total number of blocks found in the PAU.
- ❖ Then HHS were selected by a simple random selection from the list of house numbers or list of family head names as following:
- ❖ A total number of houses or list of head of families/ 15 = sample interval.
- ❖ The total 15 HHS in each PAU were distributed in the selected block by the sample interval determined by the interval between selected household and the next one.

Table 6: 28 selected PAU from different geographical areas of Khartoum locality

#	Selected area	POP	HHS	Selected HHs
1	Al hila Aljadida North	2981	514	15

2	Algooz North B	926	130	15
3	Alrimaila North Block3/4	4381	767	15
4	Alsagana West	3520	556	15
5	Aldaim west centre A	1743	308	15
6	Alsibag East	1878	320	15
7	Algana South	3244	580	15
8	Alryad South	5192	877	15
9	Alfirdoos North	4274	594	15
10	Alimtidad Block 1,2,3,4,8	7616	1239	15
11	Aloshara Block 1,2,3,4	8079	1317	15
12	Gabra North Block 1,2,3	6888	1127	15
13	Alsahafa Centre Block 34, 35	4741	767	15
14	Buriallamab East	3992	656	15
15	Soba Allawta	5587	881	15
16	Alhamadab North	2792	481	15
17	Aldabasin East Block 1	2957	485	15
18	Alsika Hadeed	1548	221	15
19	Toti North	5009	895	15
20	Altaisha East	3387	614	15
21	Alsahafa East Block 37&40	5524	777	15
22	Soba Alhila Block7&8	7181	1092	15
23	Yathrib	4289	719	15

24	Arkaweet Block 61	3275	558	15
25	Wadageeb	3368	604	15
26	Algiraif West	8756	1364	15
27	Halakhasa	2565	455	15
28	Almogran West	5009	895	15

5.5.7 Study variables (Quantitative part)

Table 7 Study outcomes and variables

	Factor	Variable	Indicator	Scale	Method of verification
Independent	Socio-demographics	Age	Years	Numerical	questionnaire
		Sex	M, F	Categorical	
		Education	Level	Categorical	
		Occupation	Description	Categorical	
		Residence	Place	Categorical	
		Income	Low, Medium, High	Categorical	Personal judgment according to household situation and general situation of the participant.
Independent	Access to care	Availability of health facilities	Yes, No	Categorical	questionnaire
		Distance of facilities	Number (KMs)	Numerical	
		Cost sharing arrangements	Yes, No And types User fee or insurance.	Categorical	

		Health workers' attitude	Yes, No	Categorical	
		Appropriateness of health services	Yes, No		
Independent	Quality of service	Availability of drugs	Yes, No Irregular	Categorical	questionnaire
		Quality of service	Deteriorated Not changed Improved	Categorical	
		Satisfaction about the quality	Satisfied Dissatisfied Do not know.	Categorical	
		Quality of buildings of health facilities	Good Bad Not changed	Categorical	

5.6 Data Quality & Management

5.6.1 Methods of data collection

Different methods of data collection were used according to the research questions we are supposed to answer, characteristics of informants. Triangulation of both qualitative and quantitative methods of data collection was used to respond to research questions.

5.6.1.1 Observation

(Catherine Marshall, 2006) defined observation as the systematic taking and recording of events that take place in the field. This method was used in the field as a tool to get informed about the new context. As also explained by (Dahlgren et al., 2007) that broad general observation can be used when the researcher enters the field for the first time as a starting

point. This method was selected, to be able to explore the general work conditions and physical conditions of the hospitals where the study was taking place and during working hours.

5.6.1.2 In-depth interview

Is defined as the conversation that takes place between the researcher and participants with the purpose to gain a deep understanding of personal experiences and perceptions of participants (Doody O, 2013).

The researcher administered semi-structured open-ended questions after first being tested for clarity and relevance, and some changes were made in the first version of interview guides. The included informants represented community members, health care providers, policymakers, and NGOs members.

The interview took 30 minutes at least and was tape recorded; mainly an interview with community members, but health care providers refused to record of the interview, so notes were taken.

The purpose of the in-depth interview was to gain a deep understanding of the perception of community members and healthcare providers about the process of devolution implementation, and the perceived changes in the utilization of health services, and job satisfaction.

5.6.1.3 Household survey

The English version of the questionnaire, the original, was translated firstly into Arabic, and then translated back to English by another person who did not have an idea about the original version. Then the questionnaire was tested and validated for clarity and consistency.

Study participants were invited to participate in the questionnaire interview after meeting the inclusion and exclusion criteria.

The study participants' socio-demographic variables and their perception of the change in the access and quality of healthcare service after the implementation of devolution was assessed using questionnaire.

5.6.1.4 Routine data

Attendance in the outpatient and wards for maternity and child health services was collected monthly for two years before, and two years after implementation of devolution (2010-2015), from the routine data register of four hospitals to assess the level of utilization of hospital services before and after implementation of devolution.

5.6.2 Data collection process

Data collection took place in two different areas according to a targeted informant and particular research question, regarding the perception of change in utilization of health service amongst the community members which has been illustrated using triangulation of quantitative (cross-sectional household survey) and qualitative methods (in-depth interview).

Both a questionnaire interview and in-depth interview were introduced to the household. Some interviews were done outside the household in the street, especially interviews with females because it is unacceptable for cultural and religious reasons to run the interview, inside the home during the day, when the husband is not around.

Qualitative respondents volunteered to participate by their free will. Data collection regarding perceived effect of devolution on job satisfaction of healthcare providers was done by a qualitative in-depth interview. Interviews took place in the targeted four hospitals among different categories of health staff including (medical doctors, nurses, lab technicians, statisticians, and administrative staff). Furthermore, policy makers have been interviewed, and representatives of the community NGO were working on health issues.

All interviews with health care providers were conducted in hospitals, where health care providers and NGO representatives work. Moreover, for policy makers in the federal and state ministry of health, little interviews took place in a private clinic of some doctors because they were busy in the hospital and can speak more freely in their clinics. The objective of the study was illustrated clearly by the introduction of interviews. The presence of other healthcare providers like specialist during the interview with trainee doctors or admin staff during the interview with health care providers made it difficult for them to talk freely. That was solved by giving the interviewee privacy or by looking for a free office where the interviewee could talk freely.

Some community members and even healthcare providers felt uncomfortable with the qualitative in-depth interview and expressed their unfamiliarity with this methodology of data collection. For some of them, it was the first time to participate in a qualitative in-depth interview. (Moreover, some respondents raised the issue of time, because they were busy and an in-depth interview, was more time consuming and harder to respond to in regards to open-ended questions compared to qualitative interviews)

Three participants from Khartoum Teaching Hospitals refused to participate in the study, in addition to the general director and medical director of Alacademy hospital and medical director of Ibrahim Malik hospital.

5.6.3 Gaining entry

It is a starting point for any field work and has so much influence on the outcome, which it is defined as the channel used by researchers to establish the definite and prolonged relationship with study participants in the specific community (Bailey, 2007).

The gatekeepers in my research included popular committees for the household survey and in-depth interviews with community members.

Objectives of the study were explained to one member, more commonly, the president of the board, and then they informed the others and gave me the permission to start data collection.

In some administrative areas members of the committee went with me to many households to facilitate the first contact with participants because people fear foreigners or outsiders, in some places, they made announcements asking participants to be included in the research in the mosque.

Regarding gate entry for in-depth interviews with health care providers, it was a complicated and prolonged process. As I had to have the letter from the SMOH to director of a hospital and to place the letter with a secretary to be shown for the commissioner of a hospital and this process took a very long time. After obtaining the signature of the director of a hospital, the letter has to be taken to the medical director for his signature.

After that, I went to different departments where I was planning to do interviews to take permission from the heads of these sections. Which was the case for Ibrahim Malik and Academy Hospital (hospitals that received the transferred service during the devolution implementation).

In Khartoum and Jafar Ibnaof hospitals, the process inside hospitals was a slightly different, and there was a system for permission of studies with actively acting research and training departments.

A letter from the director of the hospital transferred to the training section in Khartoum Hospital and research unit in Jafar Ibnaof Hospital. In Jafar Ibnaof, the format contains questions about a title of study, and the supervisors name filled, and they put the condition that prevents me from publishing the research results related to their hospital without taking the local (hospital) ethical committee's permission. I refused to sign and explained to an officer in the research unit that once I had ethical clearance; I can publish my research without conditions; and then the officer called the head of the research unit, which managed the situation.

When I submitted the letter to the Ibrahim Malik hospital manager about doing research on Ibrahim Malik Hospital, the manager replied with an apology without giving any justification for the decline. When I asked the secretary to meet the manager, the manager refused; he said he was busy, and he has no time to meet me. So I asked for an appointment, it was determined to be next week. I returned to the department of training and research at the state ministry of health in the letter; I met an officer in the unit; she told me that the ministry has no authority over hospital managers, and explained that hospitals are independent.

The subject of my research is a very sensitive one; it will cause controversy, and it will bring problems to the manager. She said that, if she was present at the time the letter was written, she wouldn't have given her approval, because the minister is conservative about studies of this nature. The transfer of service subject is covered daily with the newspapers. Her advice was, to go to the manager and ask him to approve the research by telling him that the study was not meant to harm him by any means.

After the Director of Ibrahim Malik Hospital had refused to perform the research there, I decided to meet with the director of hospitals' administration in the Khartoum state ministry of health, the person who is directly responsible for the hospitals.

After several attempts, and an intercession by an employee at the director's department in the ministry, I could not meet the director because he was not inside his office; he came early in the morning then left after work. After about a week of trying to reach him, I finally succeeded in meeting him, with a wait at the ministry from 9 o'clock to 5 o'clock.

During the meeting, I felt welcome, which does not usually happen from an administrator promoted to the position of director of the governmental establishments. Present with the public hospitals administration director was the director of curative medicine; he was introduced as an expert on research and public health. I started to narrate the problem, several interruptions happened from a manager of the good medicine department who elaborated and theorized about the research, talked about the research title being too long, and also tried to persuade me to change it. I told him that the federal research committee chose the title of this study. Moreover, he talked about how the research was too comprehensive, rendering it impossible to include the consumers and providers of service, and it would be better for me to limit it on one of them, and he said that this was friendly (brotherly) advice.

After that, the director of hospital's administration talked and asked to be given a summary of the research, after having an ethical approval and a letter from the ministry, does the hospital's director have to just approve the conduction of the research or does hospital manager has the right to refuse? Asked by the curative medicine department director.

One week later, a reply from the research department said that the director of Ibrahim Malik had been replaced, so you can go and meet the new manager. Which was described by the officer in the research department as a cooperative manager, and I found him as I said in the research, oriented and very cooperative with me.

When I came to interview the admin in both Academy and Ibrahim Malik hospitals, I was told we are banned from interviewing or giving information to any person according to explicit instructions from the Khartoum state ministry of health. They took interview guides from me, to check with the authorities, and see if they accept all questions in the interview guides. So two members of Alacademy administration refused to be interviewed, and all management of that hospital was not willing to participate in the study. In the Ibrahim Malik one, an administration member also declined to participate in the study.

During my presence in the Alacademy hospital, I found in the advertisement board, a letter from the general director of Khartoum state ministry of health, to administrations of hospitals in Khartoum banning them from giving any information to media without getting permission from the ministry.

5.6.4 Data Handling

Different types of data that were collected throughout the fieldwork were protected using trustworthy mechanisms. Records, interview notes and field notes were made anonymous and kept in a special computer with a password that can be accessed only by the researcher. All study data could be deleted after completing the project.

5.6.5 Data Quality

The questionnaires were checked for completeness and correctness in the field. A double data entry and cross-validation by addressing different questions that cover the same issue was conducted. Each participant was given a single well-defined code, and every PAU was given a different code.

5.6.6 Data Analysis

Chi-square test was used for categorical variables (sex, age, educational level...etc.) and simple T-test to compare between the means in numerical variables. To understand the factors that are associated with affordability of consultations, investigation, and drug; appropriateness, approachability and acceptability of health services, binary logistic regression models were fitted to the data. The modeling process proceeded in two steps. First, univariate binary logistic regression models were fitted in order to identify the factors that were significantly associated with the binary outcomes. Secondly, the variables that were significant ($P < 0.05$) in the univariate analyses were then used to fit multivariate (adjusted) binary logistic regression models. The data was entered and analyzed using the Statistical Package for the Social Sciences software (SPSS) version 22.

Interpretation methods of qualitative data range from a very close description of the informant's data to a wide range of conceptualization of the data (Dahlgren et al., 2007).

Qualitative data from interviews was analyzed using qualitative content analysis which is done by reading all field notes and transcripts to identify key themes that are relevant to research questions (Masanyiwa et al., 2013).

5.7 Ethical consideration

(Bailey, 2007) argued that ethical consideration should be kept in mind during all phases of the scientific research starting from, stating the research question passing through designing, collection of data and analysis.

Ethical clearance was received from the Federal Ministry of Ethical Health Committee. Initially, the application was rejected with remarks that stated that what happening in Sudan is not decentralization but it is a transfer of service to peripheries, which is named devolution, and the time since the initiation of this process is not enough to generate valid data about impact evaluation on health service. I had an appeal letter that explained the ethical committee's remarks about impact evaluation. It is true; that the time is early to have impact evaluation for the policy, but the research is interested in the process evaluation, raising questions like, how was the process of implementation? How are resources allocated? How involved are the stakeholders' in the process? As has been explained in the proposal, with WHO publications and other references that devolution is a type of decentralizations.

The consent has been taken from participants after clear illustration for the research topic and objectives. Also participants recruited on voluntary base after explaining, that participants have the absolute right to decide not to participate or to withdraw from the study without any consequences or any harm. As the research topic is somehow a hot topic and is related to politics, I had introduced myself to participants as a researcher and all data was handled with confidentiality, the researcher only had access to recordings, which were deleted immediately after writing the thesis. Names or any form of identity was not used in the thesis.

5.7.1 Harm and Benefit

The study poses no harm to the participants; the participants can withdraw at any time during the study period. There are no direct benefits to the participants from participating in this study. The indirect benefit associated with participation in the study include; evidence obtained from this study can lead to intervention in an area of access to care, and the quality of care that is given to citizens, and also about job satisfaction of health workers.

5.8 Contribution to knowledge

The study aims to provide data about the perceived effect of devolution on health services in Sudan, especially about utilization of health services, and job satisfaction of the health workers, including, adding knowledge about the devolution's effect on low-income countries, and how it works in low-resource settings.

5.9 Dissemination of results and publications plan

Results are aimed to be disseminated to Ministry of Health, hospitals of Khartoum locality,

UIO, national and international journals. In addition to the general public through local media, such as newspapers, magazines, television and radio.

5.10 Reflexivity

(Linda Finlay, 2002), argued that reflexivity, is the tools of understanding subjective self-awareness and lived experiences that are located in the space between the subject and object, and their effect on the knowledge generation process using qualitative methodology.

As I am from the same country as study participants, and I have worked as a medical doctor, I am familiar with the setting. Plus, I was a part of the doctors' movements in 2009 - 2011 to improve the working environment in hospitals, training of health staff and free health services. Being an insider could enable me to have a thorough understanding of the cultural background of the participants and make it easy for them to open up and talk freely, especially healthcare providers.

My political and ideological background along with being a part of the doctors' movement influenced the selection of research topics and shaped my viewpoint on different aspects of the study. I tried to manage this situation by the discussion with my supervisors during the preparation fieldwork and with my research assistants in the field. I disclosed my position to them, and we had feedback meetings and debate at the end of each field-working day by doing peer debriefing and listening to all recordings of that day and letting my assistants evaluate my role in the interview process. In the field, I introduced myself as a researcher and tried to be naive and to have emotional space.

5.11 Benefits and drawbacks of mixed methodology

Mixed quantitative and qualitative methodologies are sometimes referred to as methodology triangulation (Dahlgren et al., 2007). It has many advantages, such as enabling researchers to have a comprehensive and deep understanding of the research topic and to overcome the disadvantages of qualitative or quantitative methodology when used alone. It also gives research findings more credibility and reliability through triangulation of the different study results. In addition to advantages of each method, a questionnaire interview saves time and decreases researchers subjectivity and unfairness (Doody O, 2013). Whereas an in-depth interview is useful when little is known about the research topic, it also empowers research participants and allows exploration of unexpected findings.

Triangulation of study methodology (quantitative and qualitative), and using multiple data collection methods (questionnaire interview, routine data analysis, in-depth interview and observation) qualified the researcher to explore the considerable amount of diverse perspectives and experiences of the study participants and to reflect the different realities of the study context.

In addition to that triangulation augmented the comprehensiveness of study findings as well as enhanced the credibility and validity of study results through cross-checking of the findings among different study participants (Dahlgren et al., 2007).

There are also some disadvantages for using mixed methodology, such as theoretical problems in that each methodology has different assumption about reality (Ontological Assumption). And the process of knowledge production (epistemological Assumption). Therefore, there are some difficulties in using both of them as well as difficulties in integrating results of both methodologies (Dahlgren et al., 2007).

6. Presentation of findings

Section 1: Quantitative findings

This study was conducted to explore the perceptions of community members about the change in the utilization of health services after devolution. The perceived changes in the access and quality of health services, and the perceived effect of socio-demographic characteristics on them were assessed using structured questionnaire.

6.1 Response rate

The sample size of 418 households which met the inclusion criteria and were able to complete the questionnaire was based on visits to 471 households, giving a response rate of 88.7%.

6.2 Socio-demographic characteristics

6.2.1 Gender

The male/female ratio was almost equal. Out of 418 study participants' females represented 215 (51.4%), and males 203 (48.6%) of study participants.

6.2.2 Age

The mean age of study participants was 41.9 with a range between 18 and 86 years. Almost half of the study participants were in age groups below 40 years, 200 (47.8%), while 218 (52.2%) participants were in age groups above 40 years.

6.2.3 Marital status

The majority of study participants were married 286(68.4%), 110(26.3%) were single, 12(2.9%) were widowed, and 10(2.4%) were divorced.

6.2.4 Education

Regarding education, 9 (2.2%) were illiterate, 14 (3.3%) with no formal education, 51 (12.2%) with only primary education. Moreover, 34 (8.1%) with intermediate education, 127 (30.4%) with secondary education, and the majority of study participants 183 (43.8%) had university and postgraduate education.

6.2.5 Occupation

In regards to occupation, 150 (35.9%) of study participants were housewives, unemployed 57 (13.6%), 23 (5.5%) were retired, 3 (0.7%) were farmers, 56 (13.4%) were workers, 44 (10.5%) were working in small trade and business. Only one participant worked in large trade and business, 17 (4.1%) were private employees, 41 (9.8%) were governmental employees, and 26 (6.2%) had professional and technical jobs.

6.2.6 Address

Most of the study participants, almost half of them 197 (47.1%), were inhabitants in the Southern part of Khartoum locality, 44 (10.5%) in Northern part, 48 (11.5%) in Eastern part. While 39 participants (9.3%) were from the Western part and 90 (21.5%) from the center of Khartoum.

6.2.7 Monthly income

Concerning monthly income, the mean income of the study participants was 2245.02 SDG, minimum income was 150 SDG, whereas maximum income was 50000, and the standard deviation was 3057.836 indicating the large discrepancy between the minimum and maximum monthly income.

Most of the study participants 298 (71.3%) had monthly income less than 2500SDG (low income), 102 participants (24.4%) had an income ranging from 2500- 5000SDG (medium income), and only 18 participants (4.3%) with income more than 5000 SDG (high income).

6.2.8 Ethnic group

Most of the study participants 313 (74.9%) were originally from Northern state ethnic groups, 14 participants (3.3%) were from Southern states after separation of South Sudan. While 59 participants (14.1%) were from Western states, 11 (2.6%) participants were from Eastern states, and 21 (5%) participants were from Central states ethnic groups.

6.2.9 Number of persons in the household

The minimum number of household member in the study area was one, the maximum number was 22, a mean number of household members was 6.56. 168 households (40.2%) had household members ranging from 1-5 members, while 212 households (50.7%) had members ranging from 5-10 members, and 38 households (9.1%) had more than 10 inhabitants.

6.2.10 Number of children less than 5 years old

Most households out of the 245 (58.6%) in the study area had no children under 5 years of age. 87 households (20.8%) had one child under 5 years, while 56 households (13.4%) had two children under 5 years, 19 households (4.5%) had three children under 5 years, and 11 households (2.6%) had more than three children below the age of 5 years.

6.2.11 Number of children more than 5 years old

173 households (41.4%) out of surveyed households had no children above 5 years old, 214 households (51.2%) had children aged more than 5 years old ranging from 1-5 children, and 31 households (7.4%) had more than 5 children above 5 years of age per household.

6.3 Devolution and access to health care services

6.3.1 Overall Affordability and affordability of health care services

Perceived effects	Before n (%)	After n (%)	P-value
Accessibility of health care service			
Yes	223 (53.3)	146 (34.9)	< 0.01
No	195 (46.7)	272 (65.1)	< 0.01
Affordability of health care service			
Yes	226 (54.1)	85 (20.3)	< 0.01
No	192 (45.9)	333 (79.7)	< 0.01

Table 8 Perceived effects of devolution on the access and affordability of health services

Table 8 shows the perceived effects of the devolution on access and affordability of healthcare services in the Khartoum locality, Sudan. Before devolution, 53.3% of the study participants said that healthcare services were accessible to them. However, after devolution, a significant drop in perception to 34.9% was observed ($P < 0.01$). After devolution, a significant decrease also in affordability from 54.1% to 20.3% was observed ($P < 0.01$).

6.3.2 Affordability of consultation services

Independent variables	Affordability of consultation (Univariate)		Affordability of consultation (Multiple)	
	OR (95% CI)	P-value	OR (95% CI)	P-value
Gender (ref: Male)				
Female	0.87 (0.59, 1.30)	0.50		

Marital status (ref: single)				
Married	0.96 (0.61, 1.52)	0.87		
Divorced	0.55 (0.15, 2.01)	0.37		
Widowed	0.77 (0.23, 2.58)	0.67		
Address (ref: Khartoum Centre)				
Khartoum North	2.38 (1.22, 4.63)	0.01	0.83 (0.38, 1.82)	0.65
Khartoum South	1.67 (0.73, 3.82)	0.22	1.27 (0.72, 2.24)	0.40
Khartoum East	3.177 (1.25, 8.06)	0.015	0.80 (0.36, 1.78)	0.59
Khartoum West	3.18 (0.69, 2.95)	0.33	2.51 (1.03, 6.11)	0.04
Ethnic group (ref: North)				
South	2.10 (0.57, 7.69)	0.26		
West	0.78 (0.44, 1.37)	0.39		
East	1.53 (0.40, 5.87)	0.54		
Center	0.93 (0.37, 2.31)	0.88		
Payment for consultation (ref: <50 SDG)				
>50 SDG	6.33 (3.52, 11.38)	<0.01	4.36 (2.28, 8.34)	<0.01
Income group (ref: low)				
Medium	1.74 (1.07, 2.84)	0.03	1.18 (0.67, 2.08)	0.56
High	5.55 (1.25, 1.82)	0.02	1.11 (0.22, 5.69)	0.89
Annual cost (ref: <1000)				
1000- 4999	1.85 (1.19, 2.86)	<0.01	1.60 (1.00, 2.57)	0.05
5000- 9999	3.69 (1.70, 7.98)	<0.01	2.33 (0.99, 5.50)	0.05
10000- 20000	17.50 (2.27, 134.63)	<0.01	8.74 (1.03, 73.76)	0.05
>20000	1.03 (0.172, 21.93)	0.60	1.55 (0.11, 21.84)	0.75
Type of payment (ref: health insurance)				
User fee	3.01 (1.98, 4.59)	<0.01	2.46 (1.56, 3.87)	<0.01

Table 9 Logistic regression models on affordability of consultation services

Table 9 shows the odd ratios obtained by fitting univariate and multiple logistic regression models on the affordability of consultation. In the univariate model, how much participants paid for the consultation, income group, annual cost, address (being from Khartoum North and Khartoum East compared to Khartoum's Center) and how the type of payment were significant predictors of deterioration in affordability of consultation service are all shown.

However, the adjusted model showed that individuals who were paid > 50 SDG/facility visit were 6.33-times more likely to say that affordability of consultation had deteriorated compared to those who paid < 50 SDG/facility visit. Being a user free customer increased the odds of deterioration of affordability of consultation by 3.01. Participants who paid for healthcare services annually 1000- 4999 SDG, 5000- 9999 SDG, 10000- 20000 SDG are 1.60, 2.33, and 8.74 are more likely to say the affordability of consultation service has deteriorated. There was no significant gender, marital status and address differences observed.

6.3.3 Affordability of drugs

Independent variables	Affordability of drugs (Univariate)		Affordability of drugs (Multiple)	
	OR (95% CI)	P-value	OR (95% CI)	P-value
Gender (ref: Male)				
Female	1.07 (0.67, 1.73)	0.77		
Marital status (ref: single)				
Married	1.85 (1.11, 3.07)	0.02	1.59 (0.90, 2.82)	0.11
Divorced	-		-	
Widowed	-		-	
Address (ref: Khartoum Centre)				
Khartoum North	2.01 (0.95, 4.24)	0.07		
Khartoum South	1.59 (0.62, 4.13)	0.34		
Khartoum East	1.63 (0.69, 3.57)	0.35		
Khartoum West	1.57 (0.69, 3.57)	0.28		
Ethnic group (ref: North)				
South	3.40 (0.44, 26.53)	0.24		
West	0.84 (0.44, 1.63)	0.61		
East	2.62 (0.33, 20.84)	0.36		
Center	1.58 (0.45, 5.50)	0.48		
Payment for drug (ref: <50 SDG)				
>50 SDG	9.22 (5.16, 16.50)	<0.01	7.36 (3.94, 13.73)	<0.01
Income group (ref: low)				
Medium	1.65 (0.89, 3.04)	0.11		
High	1.42 (0.40, 5.06)	0.59		

Annual cost (ref: <1000)				
1000- 4999	2.81 (1.67, 4.74)	<0.01	1.77 (1.00, 3.13)	0.05
5000- 9999	4.12 (1.53, 11.10)	<0.01	1.78 (0.60, 5.26)	0.30
10000- 20000	4.07 (0.90, 18.37)	0.07	1.36 (0.27, 6.92)	0.71
>20000	0.96 (0.08, 10.84)	0.97	1.04 (0.08, 14.20)	0.98
Type of payment (ref: health insurance)				
User fee	1.96 (1.20, 3.18)	<0.01	1.37 (0.80, 2.35)	0.25

Table 10 Logistic regression models on affordability of drugs

Table 10 shows the odd ratios obtained by fitting univariate and multiple logistic regression models on the affordability of drugs. In the univariate model, how much participants paid for the consultation, annual cost, marital status (being married compared to being single) and type of payment were significant predictors of deterioration in affordability of drugs. However, the adjusted model showed that individuals who paid > 50 SDG/facility visit were 7.36-times likely to say that affordability of drugs has deteriorated compared to those who paid < 50 SDG. Being a user free customer increased the odds of deterioration of affordability of drugs by 1.37. Participants who paid for health services annually 1000- 4999 SDG are 1.77, are more likely to say the affordability of drugs has deteriorated. There were no significant gender, marital status, and address differences that were observed.

6.3.4 Affordability of investigation services

Independent variables	Affordability of investigation (Univariate)		Affordability of investigation (Multiple)	
	OR (95% CI)	P-value	OR (95% CI)	P-value
Gender (ref: Male)				
Female	0.90 (0.59, 1.37)	0.63		
Marital status (ref: single)				
Married	1.47 (0.92, 2.35)	0.11		
Divorced	2.29 (0.46, 11.29)	0.31		
Widowed	2.86 (0.60, 13.69)	0.19		
Address (ref: Khartoum Centre)				
Khartoum North	0.63 (0.30, 1.31)	0.22		
Khartoum South	1.54 (0.90, 2.65)	0.12		
Khartoum East	1.58 (0.72, 3.46)	0.26		

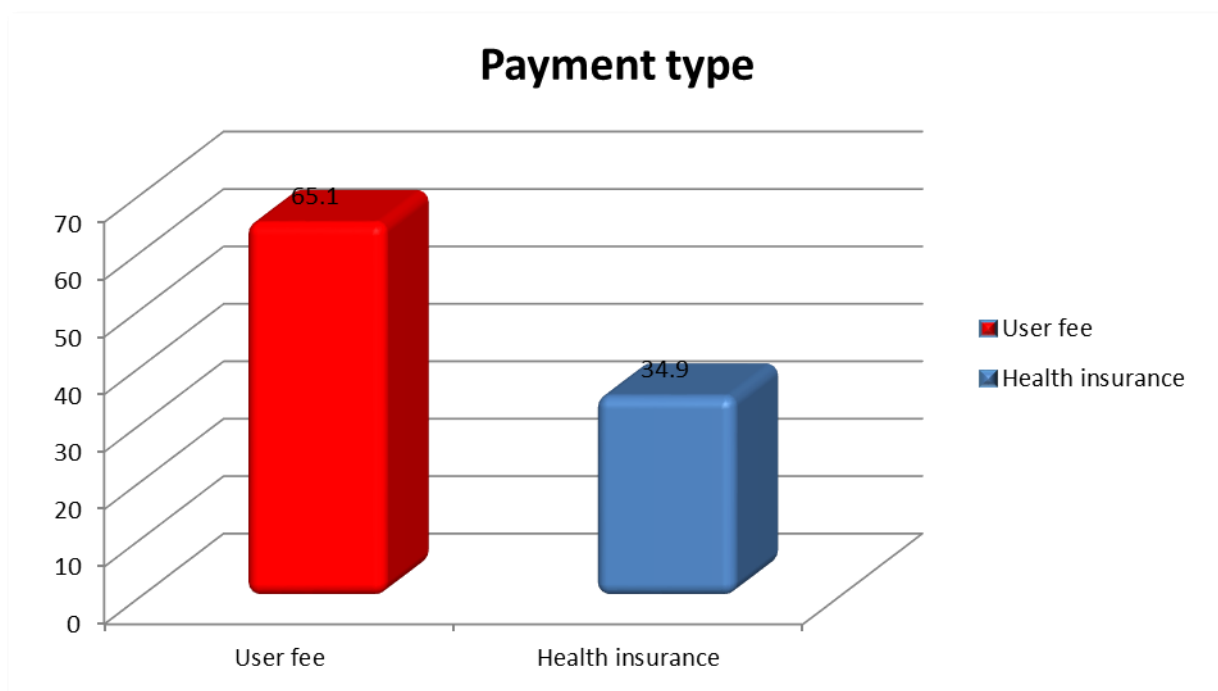
Khartoum West	1.34 (0.59, 3.04)	0.49		
Ethnic group (ref: North)				
South	2.46 (0.54, 11.21)	0.25		
West	0.69 (0.39, 1.23)	0.21		
East	1.84 (0.39, 8.70)	0.44		
Center	0.82 (0.32, 2.10)	0.68		
Payment for drug (ref: <50 SDG				
>50 SDG	6.00 (3.34, 10.79)	<0.01	4.70 (2.46, 8.99)	<0.01
Income group (ref: low)				
Medium	1.68 (1.00, 2.84)	0.05	1.08 (0.60, 1.94)	0.81
High	2.45 (0.69, 8.66)	0.16	0.59 (0.14, 2.45)	0.46
Annual cost (ref: <1000)				
1000- 4999	1.99 (1.26, 3.15)	<0.01	1.44 (0.87, 2.38)	0.15
5000- 9999	2.62 (1.21, 5.68)	0.01	1.39 (0.59, 3.32)	0.45
10000- 20000	5.87 (1.31, 26.38)	0.02	3.18 (0.61, 16.59)	0.17
>20000	1.38 (0.12, 15.59)	0.79	0.99 (0.07, 14.28)	1.00
Type of payment (ref: health insurance)				
User fee	3.20 (2.07, 4.95)	<0.01	2.75 (1.72, 4.41)	<0.01

Table 11 Logistic regression models on affordability of investigation services

Table 11 shows the odds ratios obtained by fitting univariate and multiple logistic regression models on the affordability of investigation. In the univariate model, payment of drug, income group, annual cost, and type of payment were significant predictors of deterioration in affordability. However, the adjusted model showed that individuals who paid > 50 SDG/facility visit were 4.70-times likely to say that affordability of investigation has deteriorated compared to those who paid < 50 SDG. Being a user free customer increased the odds of deterioration of affordability of investigation by 2.75. There were no significant gender, marital status and address differences that were observed.

6.3.5 Healthcare services payment types

Figure 7 Health care services payment types in Khartoum locality



Regarding which type of payment, study participants used to pay for health services; the majority of study participants 272 (65.1%) paid for health care service by the user fee, while 146 participants (34.9%) had health insurance.

6.3.6 Availability and quality of health services:

Table 12 perceived effect of devolution on availability and quality of services

Perceptions	Before		After	
	Yes N (%)	No N (%)	Deteriorated N (%)	Improved N (%)
Availability of health facilities	371(88.8)	47(11.2)	75(17.9)	343(82.1)
Availability of drugs	128(30.6)	290(69.4)	200(47.8)	218(52.2)
Availability of health workers	232(55.5)	186(44.5)	117(28)	301(72)
Quality of health facilities' buildings	¹ 269(64.4)	² 149(35.6)	39(9.3)	379(90.7)
Distance of facilities from home	³ 342(90.9)	⁴ 76(9.1)	91(21.8)	327(78.2)
Regular availability health related information	141(33.7)	277(66.3)	288(68.9)	130(31.1)

Quality of service	178(42.6)	240(57.4)	282(67.5)	136(32.5)
1 Good 2 Bad 3 Less than 5 Km 4 More than 5 Km				

Table 12 shows the perceived effects of devolution on the quality of some health care indicators in Khartoum locality, Sudan. Before devolution, 88.8% of the study participants said that health facilities were available nearby. However, after devolution, a slight drop in perception of 82.1% was observed. On the other hand, the percentage of those with no facility nearby increased from 11.2% to 17.9%. Before devolution, 33.7% of the participants said health related information regularly available in their facilities compared to 66.3% who said health related information was not available regularly in their facilities. After devolution, a considerable decrease in regular availability of health-related information from 33.7% to 31.1% and a momentous increase for those who said no regular availability of health-related information from 66.3% to 68.9% was observed. Before devolution 30.6% said drugs are regularly available in their facilities compared to 69.4% said no regular availability of drugs. After devolution, perceptions of participants who said drugs are regularly available in their facilities significantly increased from 30.6% to 52.2%, while participants who said drugs were not regularly available fell considerably from 69% to 47.8%. Regarding regular availability of health workers, before devolution participants who perceived regular availability of health staff were 55.5% compared to 44.5% who said health workers were not regularly available. After devolution, participants whose health staffs were regularly available amplified from 55.5% to 72%, whereas participants who said health staffs were not regularly available decreased considerably from 44.5% to 28%. Prior to devolution, 42.6% of participants were satisfied with the quality of health service while 57.4% were not satisfied with the quality of health services. After devolution, the percentage of participants who perceived satisfaction with the quality of service dropped significantly from 42.6% to 32.5% at the same time as participants who were not satisfied with quality of health service significantly increased from 57.4% to 67.5%. In regards to quality of health facilities, building participants who perceived the quality of facilities as good, dramatically increased from 64.4% to 90.7%, while participants who perceived the quality of facilities as poor significantly decreased from 64.4% to 9.3%. Before devolution 90.9% of participants perceived health facilities distant, being less than 5 Km from their homes which decreased to 78.2% after devolution, whereas 9.1% of participants said health facilities were more than 5 Km distant from their homes, before devolution which increased to 21.8% of participants after devolution.

Although the quality of service is an indicator specifically for the availability of drugs, healthcare workers and quality of facilities buildings, had improved, but the majority of participants ranked quality of service as deteriorated.

6.3.6.1 Facility opening time

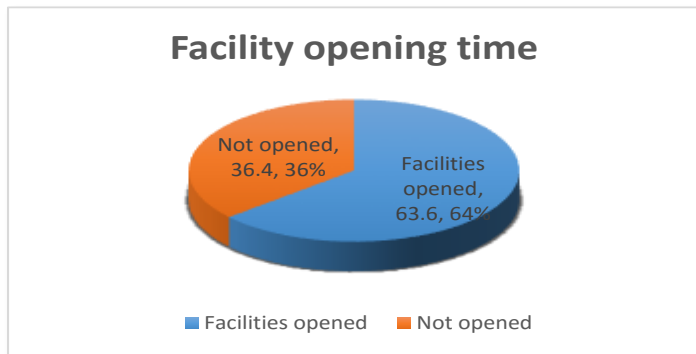


Figure 8 Opening times of health facilities in Khartoum locality

Regarding facilities opening time, or if they are open when participants need them, the majority of study participants 266 (63.6%) stated that facilities are open when they need them.

6.3.7 Appropriateness of health services to needs

Independent variables	Appropriateness of service (Univariate)		Appropriateness of service (Multiple)	
	OR (95% CI)	P-value	OR (95% CI)	P-value
Gender (ref: Male)				
Female	0.70 (0.47, 1.02)	0.07		
Age group (ref: 18-29)				
30 – 49	1.61 (0.99, 2.64)	0.06		
50 – 69	1.35 (0.78, 2.34)	0.29		
70 and above	0.91 (0.32, 2.54)	0.85		
Ethnic group (ref: North)				

South	2.72 (0.83, 8.85)	0.10	3.15 (0.87, 11.33)	0.08
West	1.38 (0.79, 2.41)	0.26	1.24 (0.67, 2.29)	0.50
East	1.30 (0.39, 4.36)	0.67	1.49 (0.41, 5.36)	0.54
Center	0.26 (0.09, 0.78)	0.016	0.26 (0.078, 0.86)	0.028
Income group (ref: low)				
Medium	0.80 (0.51, 1.26)	0.33		
High	0.49 (0.18, 1.33)	0.16		
Facility opening time (ref: yes)				
No	3.83 (2.51, 5.86)	<0.01	2.89 (1.82, 4.58)	<0.01
Health workers' availability (ref: yes)				
No	4.05 (2.69, 6.10)	<0.01	2.61 (1.65, 2.70)	<0.01
Trust of staff (ref: yes)				
No	2.78 (1.86, 4.15)	<0.01	1.71 (1.08, 2.70)	<0.01

Table 13 Logistic regression models on appropriateness of health services to needs

Table 13 shows the odds ratios obtained by fitting univariate and multiple logistic regression models on the appropriateness of health service to needs. In the univariate model, gender, income group, and age group, were not significant predictors of the appropriateness of healthcare service to needs. However, the adjusted model showed that individuals, who were originally from center of Sudan, were 0.26-times more likely to say that the health service was not appropriate to their needs, compared to individuals who are originally from Northern Sudan. That means the service is appropriate to participants that were originally from center of Sudan compared to North. Participants, who said facility was closed when they needed them, were 3.83 times more likely to say the health service was not appropriate to their needs. Participants who said healthcare staffs were not available were 4.05 times more likely to say the healthcare service was not appropriate to their needs. Participants who said they did not trust the healthcare staff were 2.78 times more likely to say the healthcare service was not appropriate to their needs.

6.3.8 Approachability of health services

Table 14 Logistic regression models on approachability of health care services

Independent variables	Approachability of service (Univariate)		Approachability of service (Multiple)	
	OR (95% CI)	P-	OR (95% CI)	P-

		value		value
Gender (ref: Male)				
Female	0.83 (0.55, 1.24)	0.35		
Marital status (ref: single)				
Married	1.26 (0.80, 1.99)	0.32	3.08 (0.88, 10.80)	0.08
Divorced	5.56 (0.68, 45.46)	0.11	16.42 (0.08, 878.50)	0.20
Widowed	1.24 (0.35, 4.36)	0.74	-	0.98
Address (ref: Khartoum Centre)				
Khartoum North	0.72 (0.34, 1.52)	0.39		
Khartoum South	1.06 (0.62, 1.81)	0.84		
Khartoum East	0.63 (0.31, 1.31)	0.22		
Khartoum West	0.58 (0.27, 1.27)	0.17		
Ethnic group (ref: North)				
South	1.34 (0.441, 4.36)	0.63		
West	1.72 (0.90, 3.27)	0.09		
East	0.64 (0.19, 2.15)	0.47		
Center	0.71 (0.29, 1.74)	0.46		
Facility opening time (ref: Yes)				
No	1.48 (0.96, 2.29)	0.08		
Waiting time (ref: > 180)				
<30	0.67 (0.28, 1.60)	0.37	0.52 (0.07, 3.37)	0.51
30 – 59	0.64 (0.31, 1.31)	0.24	2.53 (0.41, 15.52)	0.31
60 – 180	0.69 (0.35, 1.34)	0.27	11.41 (0.93, 139.42)	0.06

Satisfaction with quality of service (ref: Yes)				
No	3.80 (2.47, 5.80)	< 0.01	4.21 (0.46, 4.57)	< 0.01

Table 11 shows the odds ratios obtained by fitting univariate and multiple logistic regression models on the availability of health-related information. In the univariate model, gender, marital status, waiting time, facility opening times, ethnic group and address, were not significant predictors of availability of health-related information. However, the adjusted model showed that individuals who were not satisfied with quality of service were 3.80-times likely to say, that the health service was not approachable (health related information is not available for them).

6.3.9 Acceptability of health services

Table 15 Logistic regression models on acceptability of health care services

Independent variables	Acceptability of health service (Univariate)		Acceptability of health service (Multiple)	
	OR (95% CI)	P-value	OR (95% CI)	P-value
Gender (ref: Male)	0.84 (0.56, 1.26)	0.40		
Female				
Age group (ref: 18-29)				
30 – 49	1.34 (0.81, 2.24)	0.26		
50 – 69	1.42 (0.80, 2.53)	0.24		
70 and above	1.60 (0.53, 4.86)	0.83		
Ethnic group (ref: North)				
South	1.21 (0.37, 3.95)	0.75		
West	1.30 (0.70, 2.42)	0.41		
East	0.40 (0.12, 1.35)	0.14		
Center	0.79 (0.32, 1.96)	0.601		
Waiting time (ref: No)				
Yes	1.65 (1.03, 2.67)	0.036	1.49 (0.89, 2.50)	0.13
Staff trust (ref: Yes)				
No	5.61 (3.41, 9.25)	<0.01	4.63 (2.78, 7.73)	<0.01
Appropriateness (ref: yes)				
No	3.29 (2.12, 5.09)	<0.01	2.57 (1.61, 4.08)	<0.01
Marital status (ref: Single)				

Married	1.33 (0.84, 2.12)	0.22		
Divorced	0.89 (0.24, 3.35)	0.87		
Widowed	1.78 (1.14, 2.48)	0.41		

Table 12 shows the odd ratios obtained by fitting univariate and multiple logistic regression models on the quality of service. In the univariate model, gender, marital status, ethnic group and age group, were not significant predictors of quality of service. Participants who wait for long time to get service were 1.65 times more likely to rank quality of service as deteriorated. However, the adjusted model showed that individuals who did not trust the healthcare staff, and perceived service as non-appropriate were 5.61 and 3.29-times more likely to say that the quality of healthcare service had deteriorated after devolution.

6.3.10 Facilities waiting time for health services

Figure 9 Health care services waiting time in the health facilities



Regarding waiting time in the facility, the majority of study participants 324 (77.5%) revealed that the waiting time for health services in the facility was long.

6.3.11 Facilities waiting time per minutes for health services

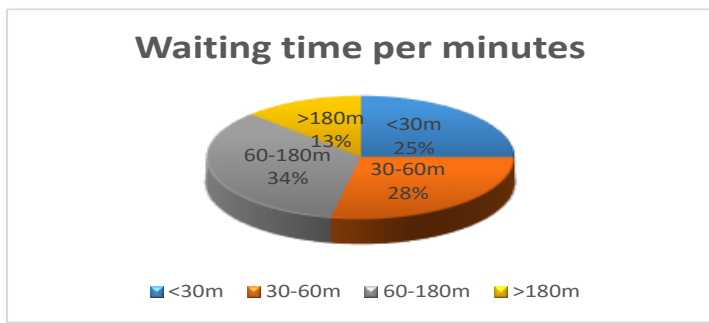
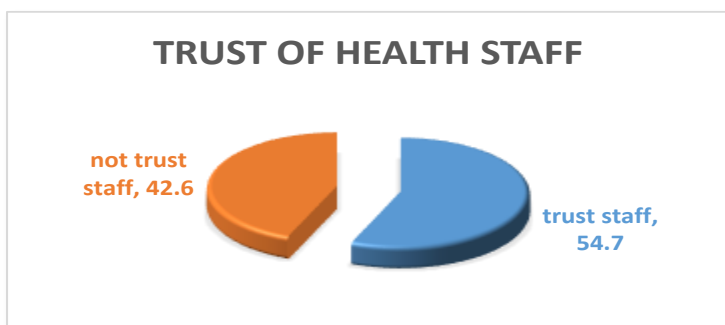


Figure 10 Health care services waiting time per minutes in the health facilities

Regarding facilities waiting time per minutes, 25.1% of the study participants waited for health services less than 30 minutes, while 28% waited from 30 -60 minutes, 34% waited 60-180 minutes, and 12.7% of the study informants claimed that they wait for health services more than 180 minutes.

6.3.12 Trust of health staff

Figure 11 Health care consumers trust on health staff in Khartoum locality facilities.



Out of 418 participants surveyed in this study, 240 participants (57.4%) trust healthcare staff in the healthcare facilities.

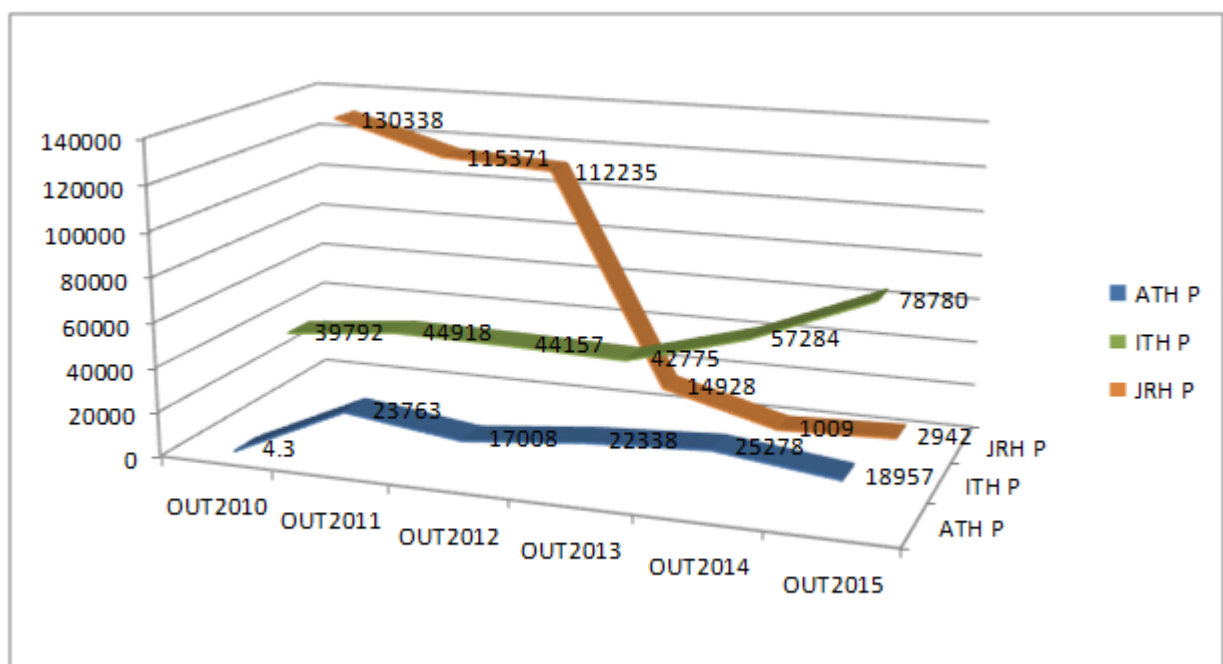
6.4 Utilization of hospital health care services

Utilization of outpatient and inpatient child health and maternity care in four hospitals of the Khartoum locality has been assessed before and after implementation of devolution (2010 – 2015). By analyzing secondary data from hospital records about attendance in outpatient clinics and admission in Khartoum (maternity service), Jafar Ibnoaf (child health), Alacademy, and Ibrahim Malik.

The maternity and child health services have been transferred from Khartoum Teaching hospital and Jafar Ibnoaf child health hospital to Ibrahim Malik and Alacademy hospitals. In the case of child health service, only an emergency service, has been transferred while in the maternity service, the whole service has been transferred. Maternity and child health services have been chosen due to their importance as part of the millennium developmental goals.

6.4.1 Utilization of child health outpatient care services

Figure 12 Child health outpatient care services utilization before and after devolution



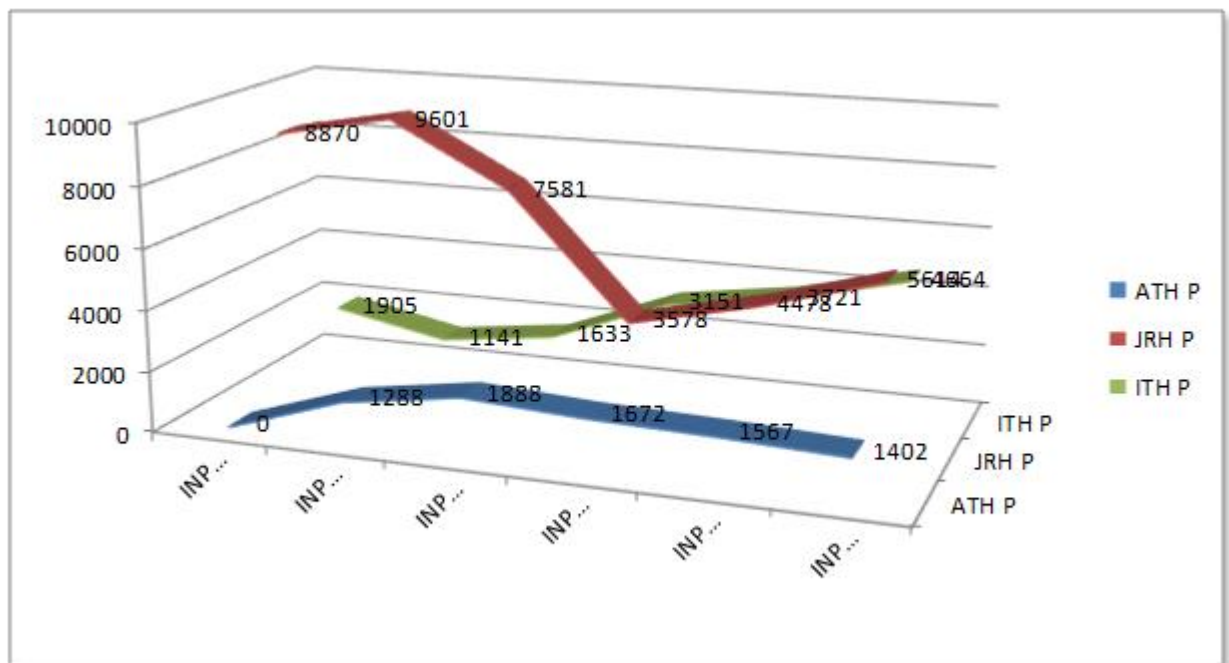
*ATHP: Alacademy Teaching Hospital. *ITHP: Ibrahim Malik Teaching Hospital *JRHP: Jafar Ibnoaf Teaching hospital... *OUT: Outpatient Child health care utilization.

Figure 12 is about utilization of hospital outpatient child healthcare, before and after devolution. The outpatient child healthcare service has been transferred in March 2013 from

Jafar Ibnoaf hospital of child healthcare to Ibrahim Malik and Alacademy hospitals. Utilization of Jafar Inboaf outpatient care was already decreasing from 2010 to 2011 and 2012 but it dramatically fell down as a result of devolution implementation in 2013 and continued to fall down after that. Ibrahim Malik the hospital, where the Jafar Ibnoaf service was transferred to after devolution utilization of its service increased from 42,775 in 2013 to 57284 in 2014 and 78,780 in 2015 is far away from the levels of Jafar Ibnoaf service utilization before transfer of services.

6.4.2 Utilization of child health inpatient care services

Figure 13 Child health inpatient care services utilization before and after devolution



*ATHP: Alacademy Teaching Hospital. *ITHP: Ibrahim Malik Teaching Hospital *JRHP: Jafar Ibnoaf Teaching hospital... *INPA: Inpatient Child health care utilization.

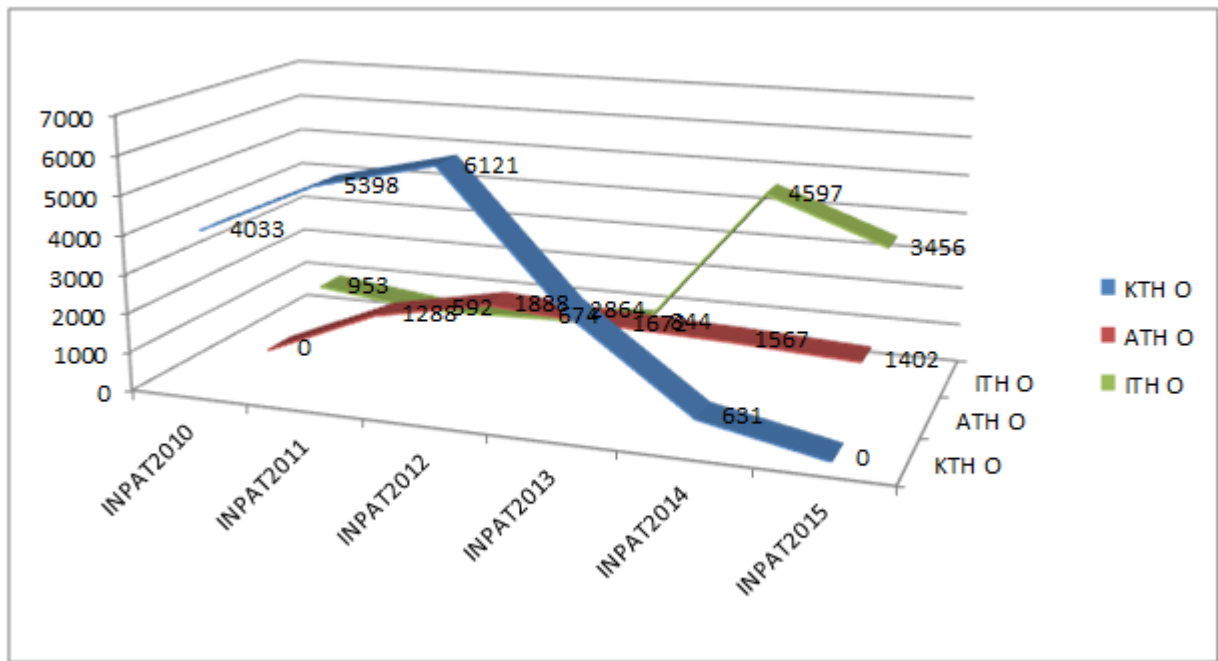
*Child health care has been transferred in March 2013

Figure 13 shows that utilization of inpatient care has decreased dramatically in Jafar Ibnoaf. It was slightly decreasing before devolution but in 2013, it dramatically fell from 7581 to 3578. Then it started to increase to 4478 and 5614, but it did not reach the figures that were before devolution. On the other hand, utilization of inpatient child healthcare

service in Ibrahim Malik has increased from 1633 before devolution to 3151 after devolution but never reached levels of Jafar Ibnoaf before or after devolution.

6.4.3 Utilization of maternity inpatient healthcare services

Figure 14 Maternity inpatient care services utilization before and after devolution

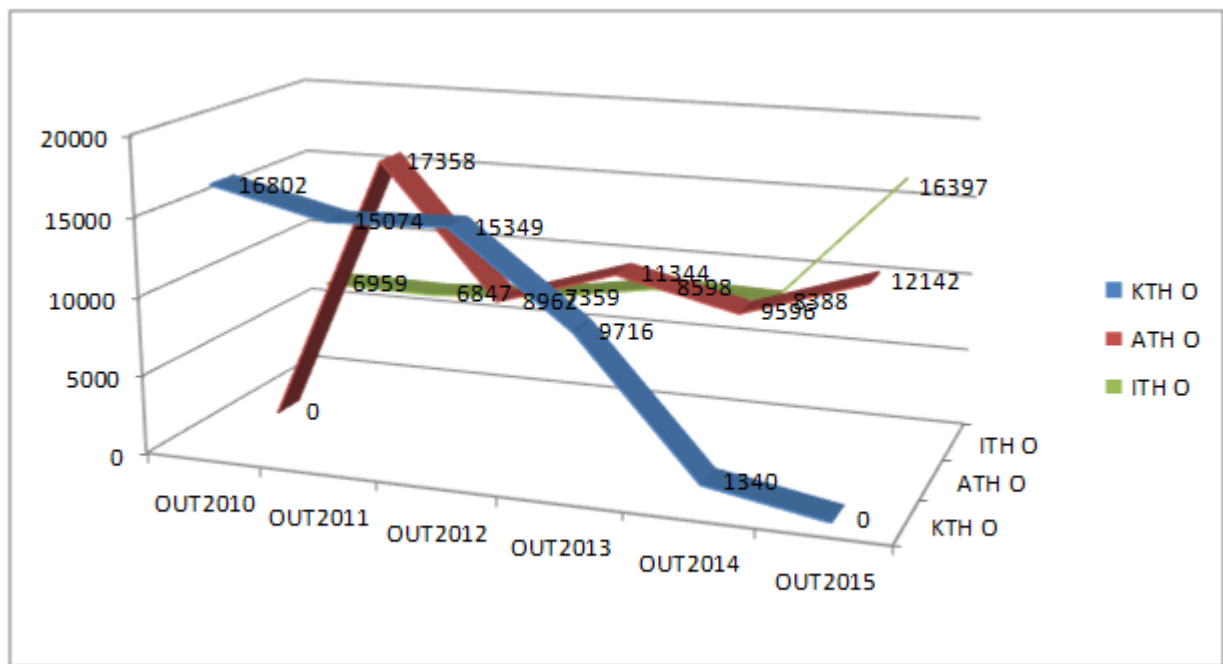


*KTHO: Khartoum Teaching Hospital Obstetrics and Gynecology (Maternity) Health Care ATHO: Alacademy Teaching Hospital Obstetrics and Gynecology (Maternity) Health Care ITHO: Ibrahim Malik Hospital Obstetrics and Gynecology (Maternity) Health Care INPAT: Inpatient health care services utilization.

Figure 14 shows that the utilization of inpatient maternity care in Khartoum hospital was increasing in 2011 and 2012, when it reached the peak then started to fall down dramatically from 6121 to 2864 in 2013. Furthermore, in 2014 when the service was transferred, it declined significantly to 631. On the other hand, the utilization of inpatient maternity healthcare service in Ibrahim Malik was increased from 674 to 844 in 2012, and 2013. After devolution, it increased considerably to reach 4597 then started to fall down again to 3456 at 2015.

6.4.4 Utilization of maternity outpatient healthcare services

Figure 15 Maternity outpatient care services utilization before and after devolution



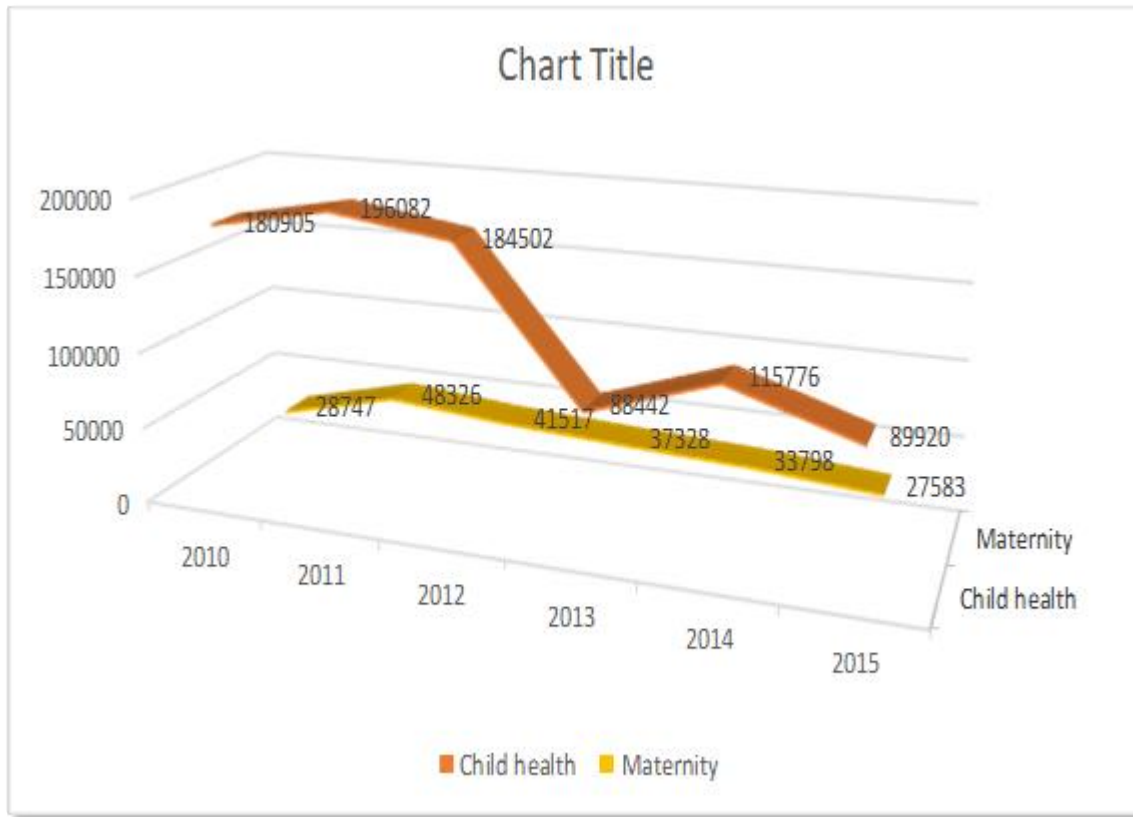
*KTHO: Khartoum Teaching Hospital Obstetrics and Gynecology (Maternity) Health Care ATHO: Alacademy Teaching Hospital Obstetrics and Gynecology (Maternity) Health Care ITHO: Ibrahim Malik Hospital Obstetrics and Gynecology (Maternity) Health Care INPAT: Inpatient health care services utilization.

*Maternity service has been transferred in April 2014

Figure 15 shows that the utilization of outpatient maternity care in Khartoum hospital was decreasing in 2011 then slightly increased in 2012, then started to fall dramatically from 15349 to 9716 in 2013. Furthermore, in 2014 when the service was transferred, it declined significantly to 1340 and in 2015 to 0. On the other hand, the utilization of inpatient maternity health service in Ibrahim Malik was already slightly increasing from 6959 to 7359 in 2012 and to 8598 in 2013. In Alcademy inpatient maternity care decreased from 17,358 in 2011, to 8962 in 2012, and increased again in 2013, to 11,344, then decreased to 9596, after transfer of service in 2014, and finally increased to 12,142 in 2015.

6.4.5 Utilization of maternity and child healthcare services

Figure 16 Maternity and child health services utilization before and after devolution



*Maternity service has been transferred in April 2014 *Child health care has been transferred in March 2013

Figure 16 shows the utilization of child healthcare and maternity services in the four hospitals in the Khartoum locality, Sudan. The utilization of child healthcare service was quite stable from 2010 to 2012 then it decreased considerably after devolution to reach 88,442.

Regarding maternity service utilization, it increased from 28,747 in 2010 to 48,326 then it started to decrease slightly to reach 37,328 in 2013. After devolution, it decreased to 33,798 in 2014 and 27,583 in 2015.

Section 2: Qualitative findings

This section presents the results of the qualitative part of the study, based on data collected through in-depth interview with health care providers, community members, policymakers and NGOs members.

The results encompass four thematic areas. The first thematic area explored study participants' perception of the context in which the policy has implemented, and the process of devolution implementation is elaborated as a second thematic area. Furthermore, the third and fourth thematic areas illustrated the study participants' perception of the consequences of devolution implementation, regarding job satisfaction of healthcare providers and utilization of healthcare services by community members respectively.

6.5 The context in which the devolution was implemented

This section involves the perceptions of the study participants about the context in which the devolution was implemented including; the distribution of facilities, financial resources, and human resources for healthcare, between the center and peripheries, along with privatization of healthcare services and its quality, and the availability of NGOs.

From the time of independence, Sudan adopted a healthcare system with facilities concentrated at Khartoum and central areas (Gazira, White Nile, Blue Nile, Sennar states) (FMOH, 1998).

This disparity in the distribution of facilities was maintained during their expansion in the sixties, until the implementation of devolution. So when devolution has been implemented, and authority of facilities was transferred from the FMOH to states, according to geographic location. It took place as follows, stated in the interview with policymaker:

"The total number of devolved hospitals were 23, from which 18 hospitals were located in Khartoum state, two in the Nile River state, two in Gazira state, and one in North Kordofan state". (Interview No 66. 22/12/2015).

The misdistribution of facilities and health staff between the center and peripheries led to citizens from other states to depend on their health services in the center, especially secondary and tertiary level care, which was quoted explicitly in the interview with a specialist in Ibrahim Malik hospital:

"About 70% of regular patients in the GIT center are from outside Khartoum state". (Interview 63. 25/12/2015).

The devolution policy is supposed to decrease the gap in the availability of facilities between center and peripheries in the form of equipped facilities and rare specialties, to avoid unnecessary referral of patients and the suffering of patients as perceived by the study informants.

The health system suffered from the misdistribution of health care providers, with the majority of them concentrated again, in Khartoum state (FMOH, 1995).

Furthermore, the health system suffered from a high drop in the number of healthcare staff, clearly shown in the above figure. Study participants perceived mass migration of staff, due to their minor salaries, and adding to that; most staff has not had a permanent job, and they experienced poor quality of training as a cause of the drop in the number of healthcare staff. In addition to that, the hiring of new staff was withheld; even when new staff had been appointed it was on a political basis, which led to a deficiency in the number of health staff in the health facilities. Consequently, devolution was hoped to be the tool for correcting disparities in the distribution of healthcare workers in Sudan as stated by study participants.

Both community members and healthcare providers stated that the privatization was a common feature in the Sudanese healthcare system, which started by the privatization of non-medical services like nutrition and cleaning services, then expanded to involve the medical services.

The collaborative treatment for vulnerable groups was in place especially in Khartoum Teaching hospitals as stated in community members' interviews.

"In the past, there was collaborative treatment in Khartoum hospital that helps poor people ". (Interview 1. 2/10/2015).

Community members and health care providers stated that before devolution, there were comprehensive services at any location, as in the case of Khartoum hospital where a cluster of services and specialties were located in one place. Therefore, if the patient came for treatment in the specialty of medicine and at any time was opted for surgery, the department of surgery and surgical subspecialties are all available within the premises including, nephrology, trauma, diagnostic procedures, etc.

"In my opinion, everyone who gets sick is better off going to Khartoum hospital where he/she can find comprehensive service. Now after devolution, they have stopped Khartoum hospital, except for the surgery department which will be shut down in the coming days ". (Interview 4. 3/10/2015).

Study informants mentioned that NGOs participated in the delivery of the healthcare service especially in conflict areas, as well as in remote areas where there is a shortage of public health coverage. The participation of NGOs in service delivery even expanded to the center and the capital of Sudan. There are other forms of NGO activities that concentrate on the assistance of patients in the form of financial support, medications and investigation costs, food and clothes as emerged in interviews with NGOs representatives.

6.6 The process of devolution implementation

This section involves the important steps of the process of decision-making and implementation of devolution as perceived by study participants.

6.6.1 Political decision

There is a consensus among study participants that the devolution decision was a political one, as it is based on the constitution of 2005, which gave the authority of service delivery to states. In addition, study informants claimed that the decision-making was not based upon scientific study, but it aimed to control the recurrent political movements in Khartoum teaching hospitals. Moreover, sell the land of the hospital, or use it as a tool to evacuate the area of the center from crowdedness that was caused by the existence of big hospitals and universities. Another motive for emptying the areas of the center from public hospitals is the advancement of private hospitals, as quoted in the interview thesis as the minister of health from investors in the field of health (Interview 34. 2/11/2015).

"Transference of hospitals ownership from the federal to state is a political decision taken by a senior politician ". (No 63 21/12/2015).

Study informants were not taking part in the decision-making, the majority of study participants were not involved in the decision or the implementation, process and they were surprised that they have to leave the hospital for peripheral hospitals. Still, some of them were included in the implementation process such as the child healthcare community.

There was a workshop conducted by Khartoum state ministry of health with the attendance of the federal ministry of health and healthcare workers' union, but the workshop was aiming to inform everyone about the decisions made, as they prevented any discussion of the devolution decree. Some study participants stated that even the information provided about decision-making was aimed at avoiding any objections. Some Khartoum teaching hospital

study participants were misinformed about the policy that it does not contain transference of services and that the hospital will be improved to referral hospital as emerged in interviews with Khartoum teaching hospital participants (Interview 46. 25/11/2015).

6.6.2 Implementation of devolution policy

6.6.2.1 Transfer of authority from federal to state level

Policymaker interviews emerged, stating that federal decentralization was conducted in March 1994. According to that, hospitals should be transferred from the federal to the state level, according to the geographic location of hospitals (Interview no 62. 18/12/2015). In 2005, the interim constitution determined that the federal level was in charge of the formulation of policy, while states are responsible for service delivery, but the implementation was delayed until 2009. The Committee has been formed of members belonging to the federal ministry of health, to process the transference of hospitals gradually to the states level.

Nine small hospitals with only one specialty have been transferred initially, and the state governor formed the committee to receive these hospitals in 1/1/2010. In March 2011, another committee was formed of both federal and state ministries of health to complete transference of another nine large referral hospitals, and then the transference decree was issued from the cabinet in 27/09/2011. The hospitals became under the authority of Khartoum state in 10/10/2011, and the committee was formed to receive these hospitals. These committees reviewed the situation of hospitals human and financial resources, debts, and running projects before executing the transference.

"We started with the implementation of the decree by launching a committee to identify health facilities included in the decree and its human and financial resources, debts, project, etc. According to committee's report, a Presidential Decree has initiated to transfer ownership of these facilities to the state of Khartoum ". (Interview 67. 21/12/2015).

6.6.2.2 Transference of health services to peripheries

Child health association consultants shared their opinion about the transference of service, that the service should be transferred after preparation of the peripheral facilities and committee formed, to check if peripheral facilities became ready or not. But the SMOH overruled the committee's decision and transferred the service without the preparation of the peripheries to receive the service as mentioned by study participants (28. 28/10/2015). While

some study participants viewed that, there is no need for the transfer of service from the central hospitals to district facilities. Instead, the service should be improved in the peripheries by the establishment of fully equipped facilities while Khartoum hospital remained in the delivery of services and should be improved to a tertiary hospital (Interview 65. 20/12/2015).

In addition, some study participants argued that the service was not transferred to peripheries, but from one central area to another, because Ibrahim Malik and Alacademy are located in the southern part of Khartoum and are considered as the central area.

"The second issue was the unfortunate appointment of a private professor as a minister of health which was certainly a mishap and totally against the law due to conflict of interest. He started his work by the dismissal of existing committees and senior consultants in each and every field to avoid objection to his decisions". (Interview 40. 17/11/2015).

Furthermore, study participants emphasized, that the service should be improved in the peripheries with the existence of central hospitals working until citizens felt satisfied with services in the peripheries, and decide to access them instead of going to central facilities. Study informants argued that the transference of service lacked staging and proper coordination, which led to the denial of life-saving services to patients who came to Khartoum and JafarIbnoaf child health hospitals; so some patients get labor pain in front of the Khartoum teaching hospital, and they have to search for the peripheral facilities.

Study participants mentioned that devolution implementation led to the closure of child healthcare departments in Haj Elsafi hospital, and Elbanjadid hospital which are located in the north and eastern part of Khartoum North (Interview No 40. 17/11/2015). In addition to, Saggana health center and Sanna hospital in Khartoum, as stated by study informants. Moreover, reverse transference of service was also associated with devolution meaning; instead, services are being transferred from big facilities to small facilities near communities as stated in community members' interviews. But the converse took place the service was transferred from Salamat center (only insurance center in the area) to Bashair hospital. Also, the dentistry service has been transferred, from Sameer center to Alacademy hospital for the benefit of the minister of health because the minister of health's university students had their training in Alacademy Hospital as shown in interviews with community members and healthcare providers.

"Sanna and Salamat hospitals were in service. Salamat was shut down, and the equipment in it had been transferred to Bashair hospital, despite it being an insurance center ". (Interview No 3. 3/10/2015).

Study informants stated that in 2012, Jafar Ibnoaf child health service was transferred, firstly the emergency service was withheld in the hospital but due to un-involvement of the community, patients continued to come to the emergency department. Study participants stated that the health workers had to meet the administration of the hospital to solve the problem because patients were in a critical situation and if they expire, it will be the responsibility of the hospital. So they decided to establish 'day one' which was the compromise solution because the ministry banned an emergency service. However, the day 1 failed to deliver the emergency service, due to a shortage of equipment and trained staff as emerged in interviews with healthcare providers.

The second step was perceived by study informants as the demolishing of many departments in Jafar Ibnoaf hospital which included Ward C15, hematology unit, wards for treatment of malnutrition, the isolation wards, medical periscope department, and administrative offices (Interview No 40. 17/11/2015). Also, other study participants added that hospital beds were transferred to Bashair and Ibrahim Malik hospitals. Moreover, the disappearance of lab equipment, 14 beds for ICU, 25 incubators, X-ray machines and the central cooling system as the transference of equipment was not documented or followed by handover procedures as claimed by study participants.

After that, the ministry of health tried to transfer the echo-cardiology department to Alshaab hospital and the general child health department to other peripheral hospitals but was faced with strong resistance from healthcare workers. So they kept them functioning, but the ministry transferred the echo specialist to Alshaab hospital, but the specialist kept coming to provide the service as stated by study informants.

Study informants stated that in October 2015, the ministry decided to give the emergency building in Jafar Ibnoaf hospital to an NGO called Bint Al Balad to use it as a child health oncology department without consultation of either the administration of the hospital or the staff (Interview 39. 16/11/2015).

Study participants stated that the board of director of the NGO and development administrator of the state ministry of health asked the staff to evacuate the following departments: workers' affairs, social researcher's office, warehouses workers. In addition,

secretary-general gates, district obtainers, physiotherapy, nutrition, health workers' union office, and engineering unit and transfer them to the dermatology hospital or all will be evacuated by using force. Which was considered by the study participants as a dictatorship from the ministry and disrespectful to the consultants and academics in the hospital and other child health oncology specialists in Khartoum state because they have excluded in decision-making. In addition, study informants argued that the building is not suitable for the oncology department, which needs buildings with special characteristics due the danger of patients in other departments of the hospital, being exposed to the adverse effects of radiation. Subsequently, on the 25th of October, the health workers' union rejected the order and instructed the healthcare workers not to evacuate departments, and they gave the ministry 72 hours to stop evacuation, or healthcare workers will begin a strike as emerged in interviews with study participants (Interview 37. 15/11/2015).

Study participants mentioned that the transference of Khartoum teaching hospital service started after a big strike arranged by hospital healthcare workers, in 2012 the decision of closing the obstetrics and gynecology department was made. Which started by the ministry's assertion that the obstetrics and gynecology service will be transferred to the big complex that will contain all sections, so the Deputy Director of the hospital approved the decision based on this assumption. After a while, it was discovered to be a lie, and she resigned as stated by study informants. Study informants mentioned that at the end of the same year, the issue of shutting down the obstetrics and gynecology department has been raised again and this time with allegations that it is contaminated with bacteria and without doing any test or examination.

"The Department of Obstetrics and Gynecology was transferred because of the presence of bacteria, all workers transferred to the department to Ibrahim Malik hospital or another hospital like Alturki depending on their home ". (Interview 62. 7/12/2015).

Moreover, the ministry of health reached out to the media and stated in a newspaper, that women in the Khartoum hospital were a contributing factor to contamination of the area with bacteria to put pressure on the hospital administration and staff, as emerged in interviews with study informants. Then right after that, police officers and bulldozers were to demolish the integrated obstetrics and gynecology department and patients via the administration offices were transferred to the internal sister Asmaa suite in the gynecology ambergris and female surgery complex. As a response to that the hospital administration formed a

committee which is headed by the head of obstetrics and gynecology department. And membership of other obstetrics and gynecology specialist (decision maker), two subspecialists, a representative of the quality control department and medical manager, a representative of health workers' union, assistant managing director as mentioned by study participants (Interview 46. 25/11/2015).

Study informants stated that a representative of the central laboratory took samples from the newborn department, and the result was negative, so the committee recommended reopening of the department. The ministry insisted on closing the department, so the ministry of health formed another committee, and the recommendation again was the reopening of the obstetrics and gynecology department as mentioned by study informants.

Study participants mentioned that the morgue department had been demolished, and there were plans to demolish the department of physiotherapy, but resistance and demonstrations inside the physiotherapy department faced the ministry. Therefore, they began to transfer healthcare workers, and this was commenced with the medicine department, urinary section, and obstetrics and gynecology healthcare workers, neurology department staff, transferred to Ibrahim Malik hospital as explained by study informants.

After that, was the turn of nephrology department, the ministry started to move the dialysis machines at night and on weekends, then was faced by resistance from healthcare workers. So healthcare workers transfer decree was released, and withholding of salaries of health staffs who resist the transfer decree as emerged in interviews with study informants.

According to study informants during Eid vacation, the ministry moved 14 dialysis machines and water purification machines, which was faced by a strike of healthcare workers in the renal unit. Members of the healthcare workers' union and emergency department staff took action posing as human barriers preventing the machines from being taken, which continued from 4:00 Pm to next day 4:00 Am. Then after that, the police intervened, and the regular dialysis machines were taken by force to Alacademy hospital, and emergency dialysis machines were transferred to Bahri hospital (Interview 53. 23/11/2015).

"The transfer of the renal unit from Khartoum teaching hospital was under gunfire ". (Interview 53. 23/11/2015).

Study participants mentioned that the neurology departments of Khartoum and Alshaab hospitals were transferred to Ibrahim Malik hospital, despite efforts to resist from healthcare workers. Then the ministry moved to the department of psychology to support patients

suffering from AIDS; in this unit the police used extreme force, breaking into the office. And confiscating the equipment, tables, and then throwing away the patient files, which led to hand fight between police and healthcare workers and demonstrations after that with the participation of some HIV/AIDS patients as perceived by study informants (Interview 33. 2/11/2015).

Study participants argued that rumors had an important part in the implementation process, especially in the transference of the neonatology department where the rumor started, about the contamination of this department by bacteria. Then the ministry took photos of two sick infants, claiming that those infants suffer a bacterial infection, and then a report has been released by the ministry and has to be signed by three persons. It was signed by only one person and immediately started to demolish the department and transfer of equipment to Ibrahim Malik, Bashair, and Alacademy hospitals as stated by study informants.

Study informants mentioned that the ministry started to pressure the universities of Khartoum and Alneelain to transfer their staff from Khartoum hospital to peripheral hospitals, so the staff of two universities have been moved to Ibrahim Malik and Bashair hospitals respectively. Followed by the staff of the ministry and even retired specialists of obstetrics and gynecology were directed to work in the fistula department only, and that was the official closure of the obstetrics and gynecology department.

Study informants argued that after the demolishing of the psychology and neurology departments, that part of the hospital was given to the Sudanese medical specialization council. With all the transfer and demolished departments, there was a transfer of health workers until about 1000 healthcare staff members have been transferred as mentioned by study informants.

Study participants mentioned that the financial outsource for the financial resources of the hospital started by the decree that was released by the ministry, to close the southern private unit and another decree by stopping the entrance fee for co-patients.

The pharmacies were transferred “Circular pharmacies” which is the Khartoum state drug supply system, and it is a private institution. The pharmacies before devolution used to be affiliated to the hospital and provide training for pharmacists, and this step was carried on, by the moving of some pharmacists to peripheral facilities as stated by study informants.

Then the ministry started to close the emergency service gradually, by firstly sharing the schedule of duties with Soba, Alacademy and Bashair hospitals to decrease the admission rates into hospital medicine wards. In the post duty day, other hospitals took their patients by ambulance and units of Khartoum hospital had only four days of duty per week as emerged in the interviews with study participants.

Study participants mentioned that in October 2015, a decree was released from the ministry of health in Khartoum state not to receive any case in the Khartoum hospital emergency department, and then the buildings of the medicine emergency were given to the nuclear medicine hospital. And the buildings of the renal unit were given firstly to Khartoum state central lab; then it was transferred to the nuclear medicine hospital which illustrates that the ministry does not have any clear vision of the transference of service as argued by study informants.

The intensive care unit (ICU) of the internist emergency was closed, the patients have moved to the ICU of the surgical complex, and the equipment was taken to storehouses. Followed by, the destruction of the operation room in the emergency department, due to an allegation of bacterial contamination again, without any investigation or report as mentioned by the study informants.

Study participants mentioned that the fate of the Khartoum teaching hospital and its role in the service delivery was unknown to all members of the hospital staff, even heads of departments or some of the administrative staff because all data about this issue was based on hearsay.

The possibilities about the fate of the hospital were to transfer it to a referral hospital of orthopedics or, the orthopedics department will be transferred to the national center for orthopedics, and plastic surgery. The pediatrics surgery center will be launched inside the hospital, but according to the views of the majority of hospital staff, the hospital will be closed. And there are no plans to make it referential because most of the skilled staffs, equipment, departments like urology, medicine and nephrology were transferred as perceived by study informants (Interview 45. 19/11/2015).

Study informants stated that in 31st of December, the emergency service for all hospital departments was closed, on the 8th of February 2016, all patients in the department of surgery, were transferred to other hospitals and the department was closed. Now in the

Khartoum teaching hospital, there are only referred clinics for cold cases of pediatrics surgery, and a fistula department as mentioned by study participants.

"The ministry has no vision; they didn't tell us about any specific plan for transferring the department, to prepare ourselves. We keep hearing talk about transferring the surgery or orthopedic departments. I have no access to any information as a head of the department, and this is evidence for the absence of a clear vision in the ministry. There is no research on diseases before taking a decision of making the hospital a reference one ". (Interview 47. 19/11/2015).

Study participants mentioned that the transference of services and equipment was conducted without documentation, or even a formal letter from the ministry, even when staff was transferred; no hand over for equipment was done. In addition to that, the patients were transferred without any evaluation of the situation, without a screening of patients that could be referred or not and even patients of the ICU were referred to peripheral hospitals, so many patients were convulsing when referred (Interview 47. 19/11/2015).

"Throughout the events of closing and transferring units, there were no written orders, but it was only a verbal agreement because they were afraid of taking responsibility ". (Interview 46. 25/11/2015).

"They transferred all patients from Khartoum hospital even those in the ICU. They treat patients like cattle, why did not they wait until improvement of the patient's condition. ". (Interview 23. 28/10/2015).

The poor coordination of the transfer of services led to some healthcare workers were transferred to facilities their specialties are not there like some surgery consultants were transferred to Umbadda hospital, which is without a theater. Moreover, hematology specialists were transferred to labs without a hematology department as stated by study participants.

When the neurology department was transferred, there were no beds to admit patients in Ibrahim Malik, so the ministry decided to admit patients inside emergency ambergris then transferred them to another place inside the hospital and finally separated as an independent center for neurology and neurosurgery as emerged in the interview with study informants.

Study informants mentioned that the transference of the medicine was by the same flawed system of neurology and even poorer, due to impromptu of Ibrahim Malik. Moreover, the ministry did not take into account that Khartoum hospital was receiving patients from all parts of Sudan and Ibrahim Malik cannot replace Khartoum hospital due to the limited space available in the hospital.

In Ibrahim Malik when the lab was transferred to the new building, it occurred over the weekend, without the presence of the head of the medical laboratory science department and without a proper handover procedure, which led to the disappearance of lab equipment as mentioned by study participants.

Study participants mentioned that the devolution decree has raised some problems such as the situation of national specialized centers because these centers were not mentioned to be with devolved facilities, which led to a conflict of interest between the federal ministry and Khartoum state ministry of health. Because these centers are located inside state hospitals, the state ministry of health considered them as devolved with other hospitals. However, the federal ministry considered that they should stay at the federal level because they deliver services to citizens from all parts of Sudan. After that, Khartoum state had tried to change the name of these centers from National to Khartoum state centers, but resistance from the center directors of Gastroenterology, Cardiology, and renal center faced them. While the neurology, oncology centers were renamed by SMOH as emphasized by study informants (Interview 67. 21/12/2015).

Study participants mentioned that when the conflict became more serious, the higher board of national centers and tertiary hospitals were formed by a presidential decree in 2015. Which was headed by the minister of FMOH, with a membership of directors of centers, medical board, Sudanese medical specialization board, representative of sectoral hospitals (Police, Military, and security hospitals), and the state ministry of health representatives. The committee's job was to deliver an evaluation report on the situation of national centers and tertiary hospitals within devolution of health services.

Study participants explained that the committee held meetings and made amendments and recommendations to the presidency and recommended returning of national centers and tertiary hospitals to the federal ministry of health authorities. There is resistance from Khartoum state ministry of health to these movements, and they think that these centers should be financed from the federal ministry of health, but the responsibility of service delivery should be in the state ministry of health as said by same study informants (Interview 67. 21/12/2015).

There is a consensus among study participants that they were not trained or enlightened about the devolution of healthcare services (Interview 32. 1/11/2015).

"The problem is there no any illumination happened to the workers about devolution., but I used to hear it on television, no one came and told us anything, no training, no workshop about devolution for the health workers ". (Interview 32. 1/11/2015).

6.7 Perceived effect of devolution on job satisfaction of health care providers

This section encompasses study participants' perceptions about the changes in the capacity of facilities, the capacity of delivered services, and the capacity of the staff. Furthermore, the perceived changes in work compensation and job security, training and professional development, accommodation and health system changes.

6.7.1 Changes in work environment

6.7.1.1 Capacity of facilities

Study informants said that the service was transferred from Khartoum teaching hospital which has a bed capacity of about 1100 beds and Jafar Ibnoaf children's hospital having 498 beds before transference of service, becoming 196 beds after devolution (Interview 17. 11/10/2015).

Khartoum teaching hospital was receiving patients from all parts of Sudan. The Ibrahim Malik hospital was considered as a replacement for Khartoum teaching hospital but had lower capacity, and the total number of beds was not more than 150, even though the number of patients and number of staff members increased after devolution, as stated by some study participants. While other study informants added, that the obstetrics and gynecology department contains 24 beds, the delivery rooms at the first stage have four beds and at the second stage also four beds which are not enough, and the number of patients is outnumbered by the number of beds available. So they resolved the issue, by allowing two patients and sometimes three to use the same bed. And, some patients lie on the stretcher placed on the floor, or even lay directly on the hospital floor without a stretcher as mentioned by both community members and healthcare providers.

"We know there are services that will be provided, although there is a difference in the capacity that we can receive (and) the number of patients coming. For example, at the surgery (section/department) there were 50 beds, 25 for men, 25 for women, so when they brought in new units (departments) and we received an excessive number of patients, for example about 100 extra patients, where would they go?". (Interview 58. 16/11/2015).

Study participants explained that in Khartoum teaching hospital part of the fistula department building was demolished, which was of three floors and contained waiting rooms, a director's office, post-operative wards, doctor's office, and bathrooms. After the destruction of the building, the administration of the hospital started to search for other buildings, but they did not find a building with the same quality. Rather they found a building with the operation room on the first floor which is not with quality control guidelines and with lower capacity than the first one as emerged in interviews with study informants.

Study participants mentioned that Ibrahim Malik hospital was originally a small hospital, new buildings were added after the transference of services such as the emergency section, refer clinics' building and the establishment of ICU with a bed capacity of only six while the ICU in Khartoum teaching hospital had 23 beds. Also, the department of a newborn had low capacity, and the hospital cannot receive patients from outside referred cases as perceived by study informants (Interview 61. 21/11/2015).

Some study informants explained that the emergency building was built in an unsuitable area due to the nearness of underground water, although the elderly staff of the hospital and the hospital Plumbing and Drain Services communicated with the ministry of health about that the ministry was insisting on building on the same undesired location. Consequently, the building was built with an expiration date, beautiful from the outside but the floor from inside is wet with water and mud, so the bridge that connects the emergency building with operation room and wards is about to collapse, due to underground water as stated by study informants (Interview 53. 13/11/2015).

Study participants illustrated that the design of the emergency room is not suitable for emergency treatment. In addition to that, it is very narrow and badly ventilated due to a lack of vents. In addition, there is a problem in the location of clinics, for example, the medicine should be separated from the surgery, and the asthma room should be near the medicine rooms. To elaborate, when asthma patients come to medicine room, firstly it is difficult for them to go all the distance, to reach the asthma room during an asthma attack, to be managed there. The trauma, surgery and x-ray room should be within a close proximity to each other. And sewage remains inside (beneath) the emergency section building which was closed because they (the sewers) constantly overflowed).

Emergency rooms are not prepared enough to receive massive accidents. The minor theater is not equipped; there is no theater for orthopedics. Besides, due to a lack of designated seating

areas available for patients, there is a shortage of chairs and stretchers (Observation Notes (6) 26/11/2015).

"I noticed that all the emergency examination rooms were narrow and badly ventilated due to the lack of vents. Also, the bridge joining between the emergency and the operating room there, is in the pier area, an area that is clearly sinking into the ground due to the inability (of the ground) to withstand the bridge's weight, due to the presence of groundwater. And sewage remains inside (beneath) the emergency section building which was closed because of (the sewers) constantly overflowed". (Observation Notes (6) 26/11/2015).

Some study informants mentioned that there is a new building for the refer clinic in Ibrahim Malik, which is also very narrow, and clinics are less than the number of departments. So each discipline or unit has limited time for the refer clinic which led to a problem in the follow-up of patients and mainly antenatal care because the same room is also occupied by surgery and internal medicine. Furthermore, other participants added that there is a severe shortage in staff offices due to unavailability of space, for example, there are six units in the medicine department and every unit with a number of doctors, but there is only one office for all six units and the same in the child healthcare department. (Interview 61. 21/11/2015).

"There is only one office for six units of medicine and one office for the pediatrics units". (Interview 65. 20/12/2015).

In the emergency room, there is an emergency lab, which is inapt, because it is very narrow with no airing and no air suction, no air conditioning as mentioned by study participants. They explained further, that before the devolution the lab was structured according to international guidelines with a computerized system and printed results. Now there is no computerized system, and results are hand-written, plus the official letters of the lab are written outside the hospital in a friend's lab. Other study informants stated that the microbiology department had been lost after devolution due to a lack of space available. Additionally, the blood bank is narrow, constituted of only two rooms as emerged in interviews with study informants. In addition to that, all investigations for adults and children are done in the same lab because there is a specialized lab for children in the hospital. Also, in the lab, there is a lack of room for waiting areas, where patients and co-patients can be seated to wait for their results, as mentioned in the interviews with study participants (Interview 53. 13/11/2015).

Study informants mentioned that in Ibrahim Malik hospital, the statistics department is the worst department, as they do not have an office, and their data is not computerized, there is

no space for the archive, which is why all of the data was lost, and all data has been destroyed after five years, due to lack of space.

A new pharmacy for the child healthcare department was launched with devolution, assembling a new furnished storage room. Because the old one was far away from the pharmacy with bad ventilation, and was too small. The design of the new pharmacy is more presentable and is nearer to meeting international guidelines for the establishment of pharmacies as explained by study informants.

Study participants stated that the isolation room of Khartoum teaching hospital has been destroyed without replacement in the Ibrahim Malik or Alacademy or anywhere in the peripheral facilities without quarantine to isolate patients.

Ambergris occurs as a bile duct secretion of the intestines of the sperm whale and can be found floating on the sea surface, or lying on the coast as it does not sink. And if any healthcare staff want to wash his/her hand it will need to go to other ambergris to do that as mentioned by study informants (Interview 23. 28/10/2015).

Study participants explained that the emergency room lacks stretchers, and there is only one wheelchair, which is in bad condition. The building is about to crumble, due to lack of regular restoration. There was a building under construction during the study; the administration claimed it would be the new emergency building for Alacademy hospital as said by healthcare providers.

Study informants mentioned that in Jafar Ibnoaf hospital there is no increase in the number of its building after becoming a referral hospital, although there is a need for more space to accommodate new units because there is no pediatrics rheumatology department in the hospital. In addition, they added that the department of nephrology needs expansion with the addition of more beds because the number of patients is much higher than the number of beds.

The hospital lost about six departments after devolution of healthcare services such as cardiac, metabolic, and infectious diseases as emerged in the interviews with study participants.

There is a problem in the availability of water and electricity, in healthcare centers, there is a recurrent cutoff water supply, which forces staff to discontinue work, also happening mainly

in the Department of renal dialysis. The shift of dialysis was canceled due to water and electricity cuts as emerged in the interviews with community members and health care providers and study field notes (Interview 26. 6/11/2015) and (Observation Note: (2) 16/10/2015).

"During my presence in Obstetrics and Gynecology department in Alacademy hospital, healthcare workers complained of the recurrent cut off of water supply and at the same time power cuts, many times although the operation room was occupied at that time". (Observation Note: (2) 16/10/2015).

Also, all peripheral hospitals lack ambulances, and it takes a very long time to have one from the central ambulances, and the private ambulance is very expensive as mentioned by study participants.

"There is no ambulance; even if it is available it will be very expensive". (Interview 19. 15/10/2015).

Healthcare providers and community members mentioned that regarding sanitation of facilities in some healthcare centers like Sameer healthcare center the quality of the cleaning has been improved, but within the hospitals, the cleaning is poor, with severely unsanitary conditions in some facilities. Community members stated that patients brought their pillows and bed sheets from their homes. In addition to that, filthiness of hospital bathrooms and presence of cats and flies in the ambergris, and the dwellers are dirty and broken as described by community members. This dirtiness was caused by the unavailability of soaps and means of cleaning and in some hospitals as in Khartoum teaching hospital, health workers were bought the means of cleaning by their money and sometimes pays to the cleaning workers from their money as emerged in the interviews with study informants. Study informants added further that in Khartoum hospital, even the operation room was dirty with blood clots everywhere even in the operation table.

6.7.1.2 Capacity of services

Study informants clarified that there is an obvious shortage in the equipment and work aid in the peripheral facilities. Other study participants illustrated more that there is a shortage in the newborn and ICU services to the extent that some study participants described the ICU in their facilities as an only bed, there is a lack of mechanical ventilation in the majority of ICUs in the peripheral facilities (Interview 58. 10/11/2015).

There is a shortage in the simplest and most basic work aid in the peripheral facilities such as prescription paper, which sometimes can bring work to a complete halt, as explained by study participants.

"There is a shortage in work aid of blood banks like gloves, reagents, and cotton, and now we stopped working due to unavailability of gloves". (Interview 66. 21/12/2015).

In Ibrahim Malik, study participants claimed that there was severe shortage in work aid to the extent that they did not last for more than one week of the month, including drugs, most of which are life-saving (Interview 19. 15/10/2015).

Regarding the working aids, there is shortage in the reagents and tubes for the lab, glucometer, chest tubes, and endotracheal tubes, which are needed for emergency intervention, due to an increase in the number of patients after devolution without a considerable increase in work aid, as mentioned by study participants. Study informants added that there is no suction machine in the emergency room; in Alacademy there is only one suction machine that is broken, and there is a shortage in stethoscopes, sphygmomanometer, no pinna for obstetric examination, wound dressers, bandages and surgical sutures. In addition, there is a shortage in ambopage, oxygen cylinders, pulse oximeters, no masks for the nebulizer as explained in the interviews with health care providers.

"There is a shortage of life-saving drugs and anesthesia drugs like pethidine and diazepam after the transfer of services". (Interview 58. 10/11/2015).

In some facilities, study participants mentioned that there even is not light in the ambergris, no monitors, and no oxygen concentrators.

Study participants mentioned that after devolution, the authority of labs has been transferred from the central laboratory administration to the state ministry of health, which led to a decrease in the received orders of work aid. Before devolution, it used to be a total number of samples done per month in addition to 25%. They explained further that after devolution the order amount decreased; lab staff had to place the order three to four times. They do not get the same amount, which affected the maintenance of lab and blood bank machines, so the labs are working with broken machines like the K and Na measurement machine, which leaks the sample and takes hours to prepare an urgent sample, which normally takes only a few minutes. Moreover, in the blood bank, there are many broken machines such as the centrifuge

machine, blood shaker, air conditioner, and refrigerator due to failure in regular maintenance after devolution as mentioned by study informants.

Study participants in the peripheral facilities mentioned that there are a number of lab tests that are not available in the peripheral hospitals like liver function test, and no complete blood count after 1:00 Pm. Moreover, there is only hemoglobin; even the renal function test is incomplete, without electrolytes, and no hormone and troponin tests (Interview 31. 30/11/2015).

Furthermore, there is no reactive protein test and bleeding profile test, which are very important tests for the child healthcare department. In addition, there is no liver enzymes test, alkaline phosphatase, and even routine investigations are incomplete. In addition to unavailability of CT-scan, no MRI, in Alacademy even ultrasound machine is broken and not working, there is no ICU in Alacademy Hospital, even sometimes the x-ray machine is not working as emerged in the interviews with study participants.

"Before the transfer, we used to have 99% of the tests but not anymore. We have lost a great deal; we used to do the hormone chemistry tests; now they brought the device, but the ministry decided not to bring us the solutions of the tests, and that is why it is not working. The Blood lab is only doing CBC tests, and there is no bleeding time although the device is available, the ministry did not bring us the solutions of the test. The microbiology lab has stopped working. Peripheral bleeding time CBC sometimes doesn't work because the samples are increased per day from 30 to 50 samples". (Interview 55. 14/11/2015).

Study informants clarified that there are no subspecialty services in the peripheral facilities, for example, in Ibrahim Malik hospital there is no renal, no cardiology service, or orthopedics, and the blood bank is not working well. Even the referral hospitals like Jafar Ibnoaf lost many services after devolution, like cardiac, metabolic, and infectious diseases that have not been compensated in the peripheral facilities as explained by study participants.

Study participants explained that there is no addition progress regarding infrastructure, no improvement in investigation tools in Jafar Ibnoaf hospital, even the X-ray machine still now is a manual machine, no additional investigation for subspecialty services, which are intended to be delivered in the hospital. In addition, they added that there is insecurity of tertiary service medications, with up to 90% of the endocrinology department medications are not found in the hospital pharmacy (Interview 40. 7/11/2015).

In the emergency room of Ibrahim Malik and trauma department of Khartoum hospitals, there are no couches, no curtains, and no privacy during per pelvic examination for patients in the department of obstetrics and gynecology of Ibrahim Malik hospital. Moreover, in the medicine department, male and female patients are admitted in the same 24-hour room without any discretion, being exposed during the examination to the opposite gender, again with no privacy as emerged in the interview with both community members and healthcare providers.

"There are four waiting rooms in Ibrahim Malik hospital, 2 for men, 2 for women, in which there are couches, but there are no beds, patients were lying on these couches; there were patients on stretchers on the floor. No curtains, so patients, male and female in the room are being exposed during their examination". (Observation Note 6. 26/11/2015).

6.7.1.3 Capacity of staff

6.7.1.3.1 Availability of staff

Community members and healthcare providers mentioned that there is a shortage in the availability of the health workers in the peripheral facilities, and even in Khartoum hospital after transfer of staff, there is also a shortage; the hospital tried to compensate via contractors and national service staff. In the department of nephrology, there is no psychologist or nutritionist, which were available in Khartoum hospital but were lost when the service was transferred to Alacademy hospital as emerged in the interviews with health care providers (Interview 19. 15/10/2015).

Community members and healthcare providers stated that there is a severe shortage in the paramedics to the degree that there is only one nurse in ambergris. Which contains more than 25 patients and sometimes for more than one ambergris, especially on the night shifts which led to a delay in the time of dosages for admitted patients. Furthermore, the psychiatric ward in Alacademy was closed due to a shortage of staff with the nurses as mentioned by healthcare providers.

Study participants mentioned that 29 lab technicians with contracts and three technicians in the blood bank were fired and without compensation in Ibrahim Malik hospital. In addition to that, there are no lab technicians transferred with service to peripheral facilities which led to a shortage in the laboratory's staff in the peripheral facilities (Interview 55. 14/11/2015).

Study informants stated that although healthcare workers were transferred to peripheral facilities that led to the availability of specialists and deputy specialists in some departments like child healthcare departments. But when compared to the rush of work, there is still a shortage in the number of healthcare providers as stated by study informants. Furthermore, study participants mentioned the assigning of staff members and mainly permanent jobs for resident staff members was withheld for a long time leading to a shortage of healthcare workers.

Community members explained that in the health center and mainly in the marginal regions of Khartoum locality there is a shortage of doctors and pharmacists that led to the closure of PHC in Soba region. Moreover, there is a shortage of specialists in the PHC facilities and patients sometimes wait for weeks to see a specialist, although some centers have specialists available once or twice per week on a regular basis, like Sameer healthcare center as clarified by community members included in the study.

"But there are no general practitioners and no house officers, and there is a problem in paramedics in the obstetric "department of IM hospital". (Interview 60, 21/11/2015).

Study participants mentioned that there are changes in the employment terms after devolution to the contract forms, which happened in Khartoum teaching hospital after the responsibility of pharmacies was transferred to the state level's circular drug fund. They also added that all old permanent staff members were fired and replaced with the newly graduated pharmacist and pharmacist assistants with temporary contracts that belong to the CDF and not directly to the ministry of health.

Study informants explicated, that after devolution and establishment of the new emergency building newly graduated general practitioners were appointed to work in the emergency room with no experience. Although there is an emergency protocol, there is no emergency room consultant in the hospital. Also, there is no vascular surgery specialist, so if there is a road traffic accident, there is the inability to do vascular surgery in the peripheral facilities as mentioned by healthcare providers.

Community members stated that the healthcare workers in the emergency rooms of the peripheral facilities were junior doctors in the training with a shortage of the qualified deputy specialists and specialists. Only three staff members in the emergency laboratory of Ibrahim

Malik hospital are permanent staff members, the rest are trainees, and national service staff and they could not do everything because of their poor qualifications.

In addition, in Khartoum teaching hospital, after transference of staff was recompensed with trainees and national service staff as explained by healthcare providers involved in the study.

Regarding staff behavior in Jafar Iboaf, some study participants from community members mentioned that the nursing staff is caring with patients and even if patients and co-patients are sleeping they wake them to give the dosage. While in peripheral hospitals it is the opposite nurses were not reminded by the co-patient. Otherwise the dose is skipped, so nurses were described as careless. (Interview 51. 3/11/2015).

Some study participant and community members raised another view and highlighted that the low and irregular payment of healthcare workers led to demoralization of the staff members, so they want other sources of income, by escaping from public hospitals during working hours to work in private facilities, and they do not work with passion. While some study participants went against the above-mentioned opinion and highlighted that health staff members and mainly doctors are sympathetic with them because they pay for their investigations and drug costs from their own pockets.

Other study informants mentioned that some of the health staff members participated in acts of corruption, for example, the artificial knees and orthopedics surgery requirements were brought from the central medical supply to hospital pharmacies. Then hospitals started to bring them suddenly from private companies and lastly, private companies started to sell these instruments directly to the patients in the wards under the agreement of some surgeons and paramedics with very high commissions from these private companies as mentioned by the same study participants.

In addition, some doctors are working in some public hospitals with vague certificates as emerged in the interviews with community members.

"I gave birth not long ago, by CS. I wrote to them that I could not pay for CS because I'm poor. The Doctor sympathized with me and covered all costs". (Interview 2. 2/10/2015).

"The situation changed a lot, and the doctors changed a lot, now they want to collect money, and they don't know how to deal with patients, they want to collect money, the goal is not treating the patient". (Interview 58. 4/11/2015).

Study informants mentioned that unavailability of work aid and stressful work conditions affected the teamwork between healthcare providers and led to a conflict of interest between the staff, as some staff like doctors and technicians had a lack of motivation to work.

Study informants explained that as consequences to the process of the devolution implementation and closure of Khartoum teaching hospital, many of the specialists and other healthcare staff left the country. As well as about six consultants from the obstetrics and gynecology department of Ibrahim Malik, hospital left the country in two years due to a poor work environment as mentioned by healthcare providers included in the study. In addition, at the health centers, migration of doctors, was considered by community members as the most important factor for the failure of operation of Alohra health center (Interview 23. 28/10/2015).

"In Ibrahim Malik Hospital is full of junior doctors because senior doctors left the country to work abroad after the closure of Khartoum hospital". (Interview 1. 2/10/2015).

6.7.2 Job satisfaction

6.7.2.1 Work compensation and job security

The permanent jobs emerged in the interview as the determinant of job satisfaction of the healthcare provider, for part of study participants stated that the ministry stopped assigning healthcare providers as permanent employees, and instead of that, there are other forms of temporary assignment by contracts. But other study participants argued that not having permanent jobs does not affect their job satisfaction because the permanent job will not add anything new to their situation. Furthermore, will prevent them from travelling abroad as the ministry conditions them to stay for a period to work inside Sudan after having a permanent job (Interview 33. 2/11/2015).

Furthermore, study participants mentioned that stopping the assignment of staff to permanent jobs led to changes in the human resource structure of hospitals. There are no resident-non-specialist doctors that stay for a long period in the hospital; and so train the trainees (subspecialists and house officers), which rotates every three –four months and so maintain the quality of services. But now the hospitals are being run by trainees, so every batch should be trained every time, and then they leave the hospital to start from scratch, which affected the continuity and the quality of services as emerged in the interviews with study informants.

"I don't have a permanent job. Having no permanent job didn't reflect on my satisfaction about my job because the permanent job will not add anything new for me". (Interview 69. 25/12/2015).

"I applied for a permanent job in the ministry for 4 or 5 times, and there are no permanent jobs, only temporal contracts". (Interview 33. 2/11/2015).

The staff payment system emerged in the interview as being unfair payment after devolution as the incentives for the payment system is not related to the task, and the payment amount is consistent regardless of the workload during the month by staff. Even following surgical operations, there are no bonuses for the staff members to motivate them; on the other hand, salaries are determined according to the status of the staff member, depending on the civil service grading system as mentioned by study informants (Interview 33. 2/11/2015).

Study participants explained that the academic development used the method of not crediting staff members who hold master degrees, not making a difference with the salary or incentive level, and without promotion of staff members, which in turn affected their motivation. There is a discrepancy in salaries, between the administrative staff and university staff and the healthcare providers, as the two formers are paid much higher salaries than the latter, as mentioned by study informants.

There is a consensus among study participants that the salary is not satisfactory because it is very low and does not cover basic needs such as the transportation, breakfast, and clothes, and does not correspond to the amount of work given. Moreover, many of the study participants claimed that they considered themselves as are working free because the salary ends very early in the month and they borrowed money from their families.

The salary of the consultant with membership in the American and British child healthcare association and in the second degree is 1760 SDG, which equals about (176 \$) and this as the highest level of salary, that emerged through the study interview after 40 years' experience as a doctor. Study participants mentioned that the deputy specialists have not had a salary; they only have incentives from hospitals. However, incentives are delayed for four - six months, and because subspecialists are in rotation and most probably leave the hospital after three to four months, they leave without taking their incentives, meaning that they are working free.

Study participants stated that these terms of employment and payment systems led the health staff members to work in the private sector and universities, to cover life expenses that led to

mental and physical exhaustion of the healthcare staff and reflected upon the quality of the provided services.

"The salary is weak, and it's not even enough for transportation, I've been working for 41 years, and I get paid only 1,200 SDG, that means 40 SDG. If I told you how much I pay for transportation and breakfast and clothes you'll find out that I'm working for free, and it's been four months without us getting paid our incentive". (Interview 35. 4/11/2015).

"We don't receive a wage from anybody. On the contrary, we pay The Medical Specialization Counsel to train. I work here for four months, and I receive an incentive for one month, which is just 150 SDP. I've got to borrow money from my family". (Interview 29. 28/10/2015).

The study participants who were in Khartoum teaching and Jafar Ibnouaf hospitals and transferred to the peripheral hospitals emphasized that their incentives decreased by 50% for specialists after devolution. They further explained that the ministry was intended to pay 50%, and the hospital 50% but the ministry did not pay, and it became irregular in the peripheral hospitals. For other staff members, the incentives were decreased by 63% after devolution. For all healthcare staff, the meal and meal allowances were withheld after devolution as mentioned by study informants.

Study informants mentioned that the promotion system for the healthcare staff had many problems, for example, lab technicians are promised promotions every five years with workers, but even after five years they most likely, do not get promoted and end up behind schedule for years. Even after getting the promotion late, it is not reflected in the salary and they continue having the same salary as before promotion.

Another problem is promotion based on politics, which took over the promotion system and led to delay in the promotion of other staff, as highlighted by the study participant. Stating that he was supposed to be in the 5th degree, but he is in the 7th degree due to crowdedness of the job promotion system by political promotion. Doctors could not reach the first degree, although other professionals in the civil service could reach this degree, while technicians only reach the 3rd degree, which is their highest level as stated by study informants.

"We get promoted every four years like the employees; people who deserve to be promoted don't get the promotion such as me". (Interview 55. 14/11/2015).

Study informants highlighted that there is no clear job description to determine the mission of different healthcare providers; so for example, nurses do not know their jobs. And that is the

reason why they only give patients the dosages and do not participate in the follow-up of the patient and even when there is a job description, it is a vocal agreement and not in writing, which led to a conflict of interest amongst staff. Moreover, no clear guidelines for treatment and sorting out of the cases, which led to a conflict of interest between different specialties, because there were no strict guidelines determined in these situations. If there is a case, for instance, considered for medicine, in actual fact it should be a case for surgical intervention as mentioned by study participants (Interview 46. 25/11/2015).

Of the causes of job dissatisfaction amongst study participants which emerged in the interviews, is that healthcare providers could not treat themselves or their relatives because they cannot afford medical expenses; even for healthcare staff, there is no exemption policy or support system for treatment provided. Two examples emerged in the interviews; there is a well-known international figure in child healthcare who wanted treatment for his mother in a private clinic. They refused to do the admission procedures until he paid 5000 SDG, and they refused his ID as a guarantee until he brought the money. Another example, also from interview data is that there is a deputy specialist in child healthcare that had an accident and was admitted to the ICU of the Police hospital and they paid a lot of money through donations from a group of fellow colleagues. These are two examples of job insecurity, where the healthcare providers cannot get treatment for themselves or their relatives when falling ill (Interview 34. 3/11/2015).

Also, there is an increase in cases of laying off staff after devolution which emerged in the interview from Ibrahim Malik that after devolution and changes regarding employment from permanent jobs to contracts, it became easy to fire staff as has happened in Ibrahim Malik. After assignment of new emergency staff, the administration fired a number of old employees including doctors as well as 29 lab technicians and three technicians in the blood bank. In Alacademy one of the staff members was required to resign because he/she contracted tuberculosis as mentioned by study informants.

Long working hours of health staffs was from causes of staff dissatisfaction as perceived by study informants that healthcare workers have the longest working hours amongst civil service staff, and sometimes the working hours have not limits, and health workers' go to work at any time when they receive a call from the hospital. In addition to that, the long working hours are not appreciated by the hospitals' administration as explained by study informants.

Moreover, some of the study participants stated that they are met by double standards from hospital administrations, as when they ordered something from the work aids, their order was disregarded, but when there is administrative punishment, it is used as a threat and the order goes through. In addition, the poor working conditions has brought job dissatisfaction of healthcare workers as the service is unaffordable and they can do nothing for patients as mentioned by study participants. But some of the study informants argued that they are not to blame, as they are not the cause of these poor working conditions and shortage of work aids and that they are doing their best; despite all of the above-mentioned barriers to help patient and work hard for them (Interview 32. 1/11/2015).

Healthcare providers included in the study stated that poor work conditions and unavailability of the work aids led to mishaps between healthcare staff, patients, and co-patients which led to an increase in cases of assaults against staff and the latest incident happened during the fieldwork when an armed forces member shot a doctor in Bahri hospital.

"I don't feel comfortable with my work, this country has nothing, if I had money I would have left it, I have been working for five years, and I haven't had any course or training. It's not acceptable to write for the patient that he has to buy sutures for the catheter, and now the water supply is off in the nephrology unit, and we might not work on the next shift". (Interview 33. 2/11/2015).

Study participants stated that the work environment is poor as the healthcare staff does not have sitting areas available, and even doctors and other technicians who work for 24 hour shifts in the peripheral hospitals do not have a place where they can eat, drink, and pray. So they eat and drink inside the lab; and even in the operating room although that is not allowed. Also, the staff does not have bathrooms, and some of them stated that they have to take the bathroom key from the administration if they want to use it, and everyone in the hospital knows that they are trying to use the bathroom. In Ibrahim Malik, study informants stated that before the implementation of devolution, they used to have sitting areas where they eat and pray, but now they lost it because there is no space as the administration has informed them.

Some of the study participants related the unavailability of professional bodies for different healthcare providers, as a reason for the violation of the rights of the healthcare workers.

6.7.2.2 Change in training and professional development

6.7.2.2.1 Private training

All trainees that are a part of the study stated that they are doing their training through their expenses, and they pay the Sudanese specialization board 10000 SDG per year, with no salary, they only took incentives from hospitals that range from one hospital to another and most of the times were delayed for several months.

"I do not have a salary; I work in (private rotation) and I receive an incentive from the hospital which is 250 SDG maximum, between 150-250 SDG, and even this is given after 3 or 4 months". (Interview 32. 1/11/2015).

The training emerged in the interviews in two categories; the first is the training staffs (house officers and subspecialists), and their training is regulated by the Sudanese medical council and medical specialization board respectively (central bodies), and the training takes place in devolved facilities. The trainees included in the study stated that there is no system for training, which is dependent only on contact with patients and service delivery, and there is no detailed training curriculum. In addition to that, the devolution of healthcare services affected the quality of training due to the low capacity of the peripheral hospitals and so there is a low amount of cases for training as in Khartoum and Jafar Ibnoaf hospitals. Also, there is a poor hospital system and infrastructure in the peripheral facilities, which also affected the training as in Khartoum teaching hospital was an internationally known training center in the past with a good system and qualified staff as explained by study informants (Interview 45. 19/11/2015).

In Jafar Ibnoaf, study informants argued that the hospital became unsuitable for non-specialist training as there is no emergency service so house-officers should not be distributed in it after devolution, as they have to develop their skills in dealing with emergency cases that will affect the emergency skills of doctors in the future.

The second, for the rest of the study participants, argued that the training quality has deteriorated after devolution as there are no training courses or workshops for the staff in the peripheral hospitals as were in Khartoum teaching hospital. The training depends on self-learning, and even the training courses and master programs offered by the ministry covering the fees were withheld after devolution.

Study participants mentioned that national hospitals before devolution had a medical sciences academy for the training of paramedics, but after devolution, these courses stopped because the state ministry failed to pay for training, with poor infrastructure in the peripheral hospitals, so the training became only theoretical training in the minister of health private university.

"There is no training, there used to be courses for staff members from other states but after devolution, it got canceled. There are no training programs, and I've never been to any course, I only get experience from dealing with patients". (Interview 45. 19/11/2015).

"The training deteriorated and became worse. At least at Khartoum hospital, there was a clinical meeting every week to discuss certain cases and monthly meetings to review death cases at wards. Plainly, these meetings are canceled now, and all academic activities are stopped now because Khartoum hospital was the center of internal medicine, and no one knows exactly where it was transferred". (Interview 29. 28/10/2015).

Other arguments stated in the study suggest that the training depends on the specialists if they are interested in the training and have time for it, then they deal with arranging a good curriculum for training. And if not there will not be a good training program and specialists in the peripheral hospitals are newly graduated and do not have time for training. Study participants from child healthcare argued that the training system for child health was not affected after devolution because the child health association in the specialization board regulates it and they are still doing training activities as before devolution.

"As a precise training system from the council of specialties, we at the pediatric unit have many activities such as daily morning meetings, monthly meetings, major weekly rounds with the specialist, weekly case Presentation by registrars". (Interview 54. 13/11/2015).

Study participants stated that they were not involved in the administrative issues nor have they participated in planning of the departments of the hospital

"We do not participate in anything, and no one asks us anything when they make plans, or in managerial matters". (Interview 34. 3/11/2015).

6.7.2.3 Accommodation

Study informants stated that after devolution, the staff accommodation authority was transferred from the ministry of health to hospitals (for female accommodation), and to doctors' union (central body) for male accommodation (Interview 53. 13/11/2015). After

devolution, the ministry of health in Khartoum state launched a committee called Female Doctors Accommodation Committee headed by the director of Jafar Ibnouf hospital, which handled the process of transference of accommodation authority from the ministry, to the hospitals as mentioned by study informants.

They further added that the hospitals failed to pay the rent of accommodation houses, and the ministry refused to pay, which led to the evacuation of these houses by police after judicial order. Bahri's doctors were housed in a part of a waiting area inside the hospital after dividing it. This also happened to doctors who are working at Al – shaab hospital as stated by study informants. Due to the narrowness of these waiting areas, these hospitals made a commitment to housing staffs that have contracts with hospitals only. Therefore, female deputy specialists' doctors could not find a space even in these waiting rooms because hospitals administration argued that doctors have contracts with the MOH not them, and they do not have to host them. This forced many doctors to pay for rent out of their own expenses as emerged in the interviews with study informants.

Study participants argued that in Jaafar Ibnouf accommodation, the standard of living is very poor. The building is too old, narrow and the bathrooms are very dirty. Also, other study informants mentioned that there was housing for female staff in Ibrahim Malik hospital before devolution which has been lost after the transference of service.

"There used to be a problem in Bahri housing; the housing was evacuated because the management of the hospital could not pay the rent and that's why they moved to live on their own". (Interview 32. 1/11/2015).

Some of the study participants argued that for the male accommodation, for years all federal and state MOH, doctors Union, Khartoum and Alshaab hospitals and all of them were denied a residence. Just in May 2015, the doctors' union has adopted it. Moreover, study informants added that the accommodation does not have a budget, and its budget should be from the rented cafeteria, grocery, and laundry inside the accommodation, now only the accommodation committee has taken the cafeteria rent, but other rents have been taken from an unknown body in the federal ministry of health. This small budget affected the maintenance of the building and sanitary level, so there is a leak of water from bathrooms which are in very bad condition. The responsibility for cleaning and another maintenance is shared between the doctors. There is overcrowding in the accommodation as one room is designed for six to seven persons' maximum but is occupied by 20 persons as said by study participants.

6.7.3 Health system changes

6.7.3.1 Centralization of management of human resources for health

Regarding human resource management in hiring and firing healthcare staff, study participants argued that it is still now centralized as the hiring of technicians and doctors should be from the Selection Committee which is the central body after the request was raised from the hospital to the state ministry of health and then to the selection committee. For the appointment of the workers, the responsibility was transferred to hospitals from May 2015 as stated by study informants (Interview 26. 26/11/2015).

Concerning, the healthcare staff that were transferred with devolution; their jobs are still at the federal level, and they still have their salaries from Khartoum hospital. Meaning, the state ministry is not able to create new jobs for 35,000 healthcare staff members which were transferred from the federal to the state level as explained by study participants.

Study participants argued that the ministry conducted a staff restoring policy in order to restore the healthcare workers from migration, which concentrated on a combination of having a permanent job and the condition to stay in service for a long time. Furthermore, for trainees (deputy specialists) the ministry conditioned having a scholarship with staying in service for eight years. This policy did not result in any improvement either in the training or the payment of staff. So the staff made a preference of not having a permanent job or scholarship from the ministry in order to migrate, soon after finishing the private rotation, as emerged from the interviews with deputy specialists included in the study.

"I applied to the ministry 4 or 5 times, and there are no permanent jobs, only temporary contracts, having no job is good for me, when it gives me the opportunity to travel abroad so they won't hold me especially that one is willing to leave". (Interview 33. 2/11/2015).

6.7.3.2 Collapse of referral system

Study informants perceived changes in the healthcare system that there is a collapse in the referral system that was reflected in the unavailability of communication between hospitals. Furthermore, there are no guidelines for referral; no procedures for communication such as phones, the hospitals that are supposed to receive the referred patients are not known which led to the referral achieved by personal relations. They added that most probably the referred patients will not be accepted in the designated hospitals, which led to the suffering of patients

and eventually resorting to the private sector. Also, study informants argued that the collapse of the referral system was manifested in the delay of the referral, from the peripheral facilities so most probably they reach the referral hospitals with complications. Which are due to the collapse of the system in addition to unavailability of an ambulance in the peripheral facilities, and the central ambulance takes too long to reach the patient, and the private is very expensive.

“Currently, there is a collapse in the referral system as there are no referral guidelines, and they did not specify the hospitals where patients have to be referred”. (Interview 32. 1/11/2015).

Study informants argued that the devolution will hopefully result in the regulation of the process of contact between the community and the healthcare facilities, as simple cases should contact primary healthcare facilities. If they are not treated or in need of further consultation, this will be done at the secondary level and then reach the tertiary level, this will make resources and effort to be dedicated to the target cases for the benefit of both simple and complicated cases. Moreover, it will make use of all levels of the healthcare system according to the severity of the case starting from the nearest facility.

6.7.3.3 Drug supply system

Study informants mentioned that after devolution the drug supply system’s responsibility was transferred from the Central Medical Supply (CMS) to the Circular Drug Fund (CDF) which is called “Push System”. It transfers the drugs to healthcare facilities and sells them meaning, it is for profit making purposes, which leads to conflict of interest with the free treatment policy as the state ministry of health used these profits to finance other projects.

“They have a system called the “Push System” which delivers drugs to all hospitals and healthcare centers to sell them. This system is working in all states, but it leads to a conflict of interest with the Free Treating Policy. As I told you, it is their main source of money”. (Interview 67. 21/12/2015).

Study informants continued to say that consequently, the authority of the hospital pharmacies transferred to CDF, which exceeds 80 major pharmacies in addition to health centers pharmacies. And these pharmacies have nothing to do with the hospital administrations and belong directly to CDF, which is part of the state ministry of health but with independent administration. Before devolution of healthcare services, these pharmacies were responsible for the training of pharmacists and logistics of the pharmacy department; the types of drugs were ordered according to the hospital requirement. However, they are now ordered

according to market trends. Also, they added further, that the pharmacy was supporting the incentives of the pharmacy's staff, and the pharmacy was obligated to support treatment of vulnerable groups and unknown people, all of that is now gone (Interview 67. 21/12/2015).

6.7.3.3.1 For-profit and centralized drug system (privatization)

Study informants explained that after the devolution of the healthcare services, the circular drug fund started to add 5% to the prices of drugs and supplies to make a profit. When hospitals make the monthly order, the circular drug fund places these orders from a central medical supply using the hospital's account there. Then central supplies vehicles transferred these orders to hospitals, but the written input is released by the name of CDF as emphasized from study participants. Study informants stated that hospitals now suffered a loss to have items with specially supported price from the central supplies because they are forced to take items from CDF.

"Drugs come from rotational medications, although drugs are cheaper at the medical supplies, we are forced to deal with them". (Interview 57. 16/11/2015).

Study participants mentioned that the state ministry of health took the internal pharmacies without consulting the staff working in these pharmacies. Then the staff delivered the idea that the pharmacies should technically belong to the hospitals, but this idea was rejected because internal pharmacies generate huge profits and there is no profit earned from emergency pharmacies.

Study participants explained that the central medical supply fund is the responsible body for providing health facilities with drugs and supplies. But it has undergone changes that it has its pharmacies and tends to buy drugs directly to people. They further added, that there is fluctuation in the rate of the hard currency, and there are political agendas aiming to weaken the role of the central supplies. For example, although the central role of central supplies is to provide drugs for healthcare facilities, the circular drug fund started to take drugs and supplies from private companies instead of the central supplies (Interview 51. 25/11/2015).

Study informants explained more that the central supplies were transferred to an authority, which means it is no longer under the authority of "Audit Office" and banking accounts are not supervised by the government. In addition, this is another step forward towards privatization as it became self-financed and with a profit motive.

Study participants argued that before devolution, the drug budget was transferred from the ministry of finance directly to the central medical supply, and the hospital determined the amount and type of drugs and could manage the rest of money. Now the hospitals request drugs from circular drug fund, and they take money from the ministry, and the amount of the order is determined by the ministry's paid money, and not by the order itself. The central drug supply was an independent body belonging to the cabinet while the circular drug fund belongs to the state's ministry of health.

6.7.3.4 Conflict of interest between federal and state levels

Study informants mentioned that the devolution of healthcare services has created new problems as a result of a conflict of interest caused by the transfer of staff responsibilities to the state level, which led to a decrease of FMOH governance over the healthcare sector. Moreover, continued to illustrate that the FMOH has to intervene in the cases of epidemics, which is now impossible, as all staff members are under the authority of the state's ministry of health. Moreover, in cases of expansion of healthcare service to new areas, the FMOH cannot do training because the healthcare staff and health institutions are under the state ministry of the health authority (Interview 67. 21/12/2015).

While another study respondent viewed, that the devolution of healthcare services led to the unification of healthcare service delivery instead of the dual system for service delivery, federal and state. Now the federal level is responsible for the formulation of policies and regulation, and states are responsible for service delivery.

6.7.3.5 Changes in budget

6.7.3.5.1 Financial arrangement of devolution

The devolution decree had a financial arrangement that emerged from the interview data which is, that the financing of devolved facilities will be gradually transferred from the federal level to the state level. The federal level will cut 15% of the budget in the first year and 30% in the second year until 2017; Khartoum state should incur all health expenses. Moreover, in the first and second years, the state level should cover the cut in the budget until it covers all budgets in 2017.

"The federal support will be decreased by 15 % every year starting in 2015 and Khartoum state must bear all costs after seven years". (Interview 66. 22/12/2015).

6.7.3.5.2 Centralization of budget and corruption

Study participants argued that after devolution, there is centralization of the budget of the hospitals as the total amount of hospital's income has to be sent to the ministry of health and then part of it returns to hospitals as operational budget. While before devolution, the hospitals had the right to use part of the income to cover deficiencies that appear in the operation of the facility. They continued to argue that the control of the ministry over hospital's income led to a decrease in the hospital's budget although the introduction of user fee led to an increase in income of hospitals, which does not reflect on the availability of work aids or staffs' incentives (Interview 63. 25/12/2015).

Study participants mentioned that at the level of hospitals laboratories after devolution, the income of the lab goes to the ministry, and it will be cut by the ministry. Which led to laboratory budget deficiency and so shortage in the ordered reagents and supplies; while it was used by the lab administration to support the orders of the lab, staff incentives, and services. So labs have not experienced a cut in the reagents and supplies before devolution as mentioned by study informants.

Study informants argued that although the federal ministry of health has not started the deduction of 15% of the budget; the actual budget that reached the devolved facilities is decreased by 15% and the state ministry said that it already decreased it from the federal ministry of finance.

Furthermore, study informants added that although the budget cut started in 2015 by 15% one of the devolved facilities, administrative staff stated that the hospital received budget decreased by 30%.

6.7.3.5.3 Changes in budget after devolution

The state-level policymakers argued that the federal support is not that huge, it is about 200,000 SDG per month and covers staff wages and part of the operational cost, and the state knows these financial arrangements from 2010 and the hospital budget will be covered by hospital resources.

Study participants were raised their fears concerning the financial capabilities of the Khartoum state to cover the expenses of the devolved facilities. Because the state was not able to cover the first year's cut of 15%, and requested from the federal ministry of finance to delay the starting of the budget cut, the federal level paid for the entire budget.

Study informants mentioned that the budget of devolved facilities decreased by 15%, in one facility; the budget decreased by 30% after devolution, due to the inability of the state's ministry of health to cover the federal level cut in the budget. That is reflected in the devolved hospitals operational budget, for example, the operational budget of Khartoum teaching hospital decreased 400,000 SDG per month, and the operational budget of Jafar Ibnoaf decreased 420,000 SDG per month as emerged in the interviews with study informants (Interview 67. 21/12/2015).

Study informants stated that the budget of Ibrahim Malik hospital has increased from 80,000-120,000 SDG per month after devolution, but it has nothing to do with the huge increase in the number of patients after devolution. Also, they mentioned that the budget for the emergency treatment is 21,000 per month which cannot cover the huge number of patients after devolution, there was 20-25 thousand for free treatment of children under five and paid directly from the ministry of health to CDF but not regularly paid and was stopped from the beginning of 2015. There were 57 thousand SDG for free treatment, and 75 thousand SDG as fiscal support of hospital drug supply, also irregularly paid to CDF and stopped from December 2015. Therefore, in December, the hospital borrowed 20,000 SDG to bring drugs to the hospital. The devolution also led to the loss of external financial support to Jafar Ibnoaf hospital from Germany as mentioned by study informants.

"But the budget doesn't cover even 25% of the drug orders due to the huge number of patients". (Interview 57. 16/11/2015).

Study participants argued that the aim of devolution was to decrease the state support for the healthcare, generally and the hospital services more specifically.

Study participants mentioned that the decrease in the budget led to a deficit in the maintenance budget after devolution and budget of paying for new devices, which led to maintenance by deferred payment from companies, hence hospital debts. Also, the accumulated hospital debts was to be covered by the FMOH, which was stopped after devolution.

6.7.3.6 Strengthening of the private sector

Study participants stated that the aim of the devolution was to outsource the Khartoum teaching hospital and Jafar Ibnoaf free services, so patients were forced to go the private sector. In addition, study informants argued that patients from states other than Khartoum

state are forced to access the private sector, due to a low capacity of the peripheral facilities and the privatization of healthcare services in the public facilities, as the simplest work aids, like cotton and gauze were paid by citizens. Furthermore, unavailability of drugs, inadequate service and delay of treatment in the public facilities emerged in the interviews as a reason why citizens preferred to go to the private sector. Also, the issue of selling the land of Khartoum hospital has emerged as a hidden agenda that drives the devolution for the benefit of the private sector as the minister of health is an investor in the healthcare field.

Also, community members mentioned that citizens in the areas of Soba are forced to access the private sector due to the hospital not having an emergency service in the area, as the healthcare center is not working and other hospitals are far away. Besides, the facility opening hours of the healthcare centers, and poor quality of services in the centers mainly, unavailability of specialists, forced healthcare consumers to access the private sector as mentioned by community members. Additionally, after devolution of emergency service of Jafar Ibnoaf to peripheries patients started to escape being referred from peripheral facilities. By going to private clinics of specialists who are working in Jafar Ibnoaf hospital to be referred from the private clinic to the hospital without going to the peripheral facilities as emerged in the interviews with community members and healthcare providers (Interview 22. 18/10/2015).

Study informants argued that the process of devolution implementation and sudden closure of emergency services, without the involvement of community, also participated in driving patients to the private sector along with healthcare staff leaving the public facilities and going to the private sector. Some study informants stated that the direct consequence of devolution is the increase in a number of private hospitals along with forcing people to access these hospitals even for emergency cases; although these hospitals are very expensive. Moreover, they added that the devolution is for the advancement of private investors and wealthy people and not in favor of the less privileged and vulnerable groups of the population.

In addition, the distance of the peripheral facilities, from some of the study participants, when thinking of transportation cost, it is more cost effective to access the private sector as stated by community members. In addition, the transference of service led to fragmentation of the public service and the private sector remained as a comprehensive service, so citizens prefer to use private healthcare that is also stated by study participants as a cause of private healthcare empowerment. Of the reasons that forced citizens to access the private sector, is

the ICU and newborn services are not found in the public sector, and when there are cases in critical condition, people become forced to access the private sector despite its high prices, as mentioned by study informants. Study participants stated that in Khartoum hospital, there was a phenomenon called private brokers, who are old staff in the hospital, that took patients from the ambergris of Khartoum hospital to undergo surgery in the private sector and for that, they take commissions.

"Since the closure of Jaafar Ibnouf, we decided not to go to any public hospital. We only go to private clinics". (Interview 12. 9/10/2015).

6.7.3.6.1 Privatization of maternity, and child health care services

Study informants stated that after devolution evening, operation lists have been conducted in Khartoum hospital in the surgery, pediatrics surgery and orthopedics. So the hospital started to decrease the number of patients in morning list and increase them in the evening list which is more expensive than the morning list and cheaper than the private sector. Furthermore, the hospital laboratories formed a partnership between the ministry of health and private investor as in Alacademy hospital. In addition, study informants stated that before devolution surgical operations were free in Alacademy and Ibrahim Malik hospitals but after devolution, there came a charge. In Jafar Ibnoaf before devolution the treatment, investigations, and the diet were totally free for children, but after the devolution, the budget of drugs became deficient, so most of the required drugs are brought by families as explained by study informants (Interview 12. 10/10/2015).

Both community members and healthcare providers stated that all work aids have been paid by citizens, from cotton, gauze, plaster, drugs, and in some hospitals, even lab containers are purchased by citizens including all surgical operation requirements such as soap, sutures, and palates etc. Before devolution, the lab investigation was for free in Jafar Ibnoaf hospital but after devolution, there is a charge in Alacademy hospital as stated by study informants.

Study informants mentioned that after devolution, covering expenses of the service, in Ibrahim Malik made the cesarean section and natural labor a charged service. In the beginning, the delivery fee was a small fee, twenty something pounds, now it is 270 thousand. Ergometrine, which is the emergency drug that is used in labor, was for free in the beginning then a charge was placed, and every patient has to purchase the drug.

"To cover expenses of services, the hospital offers cesarean section and natural labor by charging patients". (Interview 62. 7/12/2015).

Study informants argued that the delivered service in the national centers are also privatized. For example, in the neurology center the admission to the ICU costs 5000SDG, although it is a public center, because the center has no allowance from the ministry of health, and the operational budget is collected from the price of the service.

Additionally, they continued to mention that the drugs and investigations of the renal dialysis service were free before the transference of the dialysis service, from Khartoum to Alacademy hospital but after that, the patient has to pay for drugs and investigations.

From the changes that are perceived by the study participants after devolution, are that the fee exemption policy for the vulnerable groups is not in place in the devolved facilities as a result of a decrease in the budget of these hospitals. For example, the free treatment budget in Ibrahim Malik; although it is already little and not regularly paid, was eventually stopped which is reflected through the existence of the policy, as mentioned by the study informants. Study informants mentioned that in Alacademy hospital, staff received a memorandum, not to support vulnerable groups. In Khartoum hospital in addition to the ministry budget, there was another budget from hospital resources namely, from the income of internal pharmacies to support vulnerable groups and people with unknown ID, which stopped after the transfer of the pharmacies authority to the CDF of the state ministry of health as mentioned by study participants.

Study informants argued that the cut in budgets after devolution reflected directly on the budget for free treatment which is also reduced in Jafar Ibnoaf and Khartoum hospitals.

"(Interviewer angry): don't you understand Arabic? I told you that if you don't have money, you cannot find health care. Those who don't have money just die. It doesn't matter where you are; whether private or public hospitals". (Interview 21. 17/10/2015).

6.7.3.7 Changes in administration

6.7.3.7.1 Centralization of administration

Study informants argued that the administration became over centralized after devolution which manifested in the following example; patients in Ibrahim Malik complaint of loss of privacy due to the absence of the curtains in the emergency rooms, so the administration of

the hospital decided to pay 20 curtains from the hospital income. Immediately the administration got a call from the state's ministry of health saying that the administration has no right to pay for anything of the sort, there has to be a request from the ministry, and the ministry will provide anything needed. They ordered the administration to return the curtains and so the hospital remained without curtains until the fieldwork was finished. Another manifestation of the centralization of the admin, which was mentioned by study participants, is that the directors of hospitals are being appointed directly by the state's ministry of health, and not elected by the staff in the hospital. Furthermore, their general plans and guidelines are determined by a higher rank than the ministry, and hospital administrations execute them as mentioned by some study informants. The state level policymaker's justification for this is centralization, as that is when hospitals were under the control of FMOH; they had a semi-autonomous administration for hospitals, which led to over hiring and hospital debts. But on the contrary to the state's argument, the federal level to these allegations is by explaining that these problems have nothing to do with the semi-autonomous administration, because they are preexisting problems and this argument is only to justify the over centralization restrictions for hospitals from the state level (Interview 73. 28/12/2015).

During fieldwork, admin staff from Ibrahim Malik hospitals and the admin staff of Alacademy hospital refused to take part in the study. And their excuse was, that they are banned by the ministry of health not to give any information unless they take permission from the general director of the state's ministry of health as stated in the study field notes.

Study participants argued that during period of devolution implementation, the staff of Khartoum and Ibrahim Malik hospitals was directed directly from the general director of the state's ministry of health. To the extent that the committee of inquiry formed by health staff in Ibrahim Malik hospital was directly from the general director of the state's ministry of health.

Study informants mentioned that after the devolution, the traditions of administrative work have been lost, and the work became an individual effort, and there are no committees that determine the type and number of drugs and supplies. One person (head department) without meeting with other department members makes decisions.

6.7.3.7.2 Dilution of responsibilities and corruption

Study informants argued that devolution of healthcare service, is associated with dilution of administrative responsibilities. For example, in the laboratory department, when they approach the hospital administration, they say the lab belongs to the central laboratory administration, and when they approach the latter, they said after devolution the responsibility has been transferred to the state's ministry of health. And staff complain about filing complaints, to the hospital administration, and everyone denies responsibility. Also study informants argued that the same issue has emerged in the national centers when staff have a complaint, the administration responds by claiming that these centers are independent and not part of the hospitals. And at the same time they have a duty in the emergency room of the hospital and have ambergris inside hospitals, so their situation is ambiguous (Interview 55. 14/11/2015).

Study participants mentioned two examples of administrative corruption, the first one is that when there are a ministry inspection rounds, the administration brings a broken device and claims it is working. The second is, in the early period after devolution, there were a lot of delivery monitoring devices that suddenly disappeared after the opening of the obstetrics and gynecology department. Furthermore, the incentive for 9th-degree health staff is 75 SDG per month and 100 SDG for the 7th degree, and these amounts are less than what was decided by the ministry of health.

The study participants argued that there was an administrative staff turnover to the extent that in Alacademy hospital, in one year there were ten medical directors appointed for the hospital, which led to the failure of the administration. In addition, low qualifications and politically based appointment of the administration has emerged as a cause of poor performance of hospital administration; politically based appointment led to over hiring in the administration.

6.8 Perceived effect of devolution on access to health services

This section contains the study informant's perceptions about the changes that occurred in the availability, quality, affordability and access to healthcare services after the implementation of devolution of healthcare services.

6.8.1 Availability of health services

Study participants argued that the transference of service before the preparation of the peripheral facilities led to inadequate services being delivered and unavailability of many types of healthcare service, so patients returned to the central hospitals. In addition, due to inadequate investigation tools in the peripheral facilities, staff cannot deliver diagnostic services to patients and just do first aid and transfer patients to other facilities; and some of the study participants said that they only see the patients dying in the peripheral facilities due to unavailability of service.

Community members argued that healthcare centers do not have services due to unavailability of staff or drug in the center's pharmacy, and so the devolution is only built without a base or stand on the most important pillars, drug, staff, and lab (Interview 35. 4/11/2015).

There is a shortage in the neurology service, as it was transferred from Khartoum and Alshaab hospitals to Ibrahim Malik, where it became an independent center that did not cover emergencies or receive referred cases from other hospitals including Ibrahim Malik hospital, so it did not deliver any service as mentioned by study informants.

Study participants argued that the area around the central hospitals was developed over a long time, which contains investigation complexes, central blood bank, Alshaab hospital and other tertiary hospitals that are not found in the areas around peripheral facilities. So the patient is carried from the peripheral areas to the center to do investigations and then return due to unavailability of investigation service. Also, there is a shortage in the newborn and ICU service in the peripheral facilities.

Regarding Jafar Ibnoaf hospital patients, after being transferred to a referral hospital, they receive patients from all parts of Sudan and the conflict between national service delivery and being administrative and financially under Khartoum state authority, have been raised by study informants.

6.8.1.1 Emergency services

Study participants mentioned that patients from Khartoum state and other parts of Sudan lost a well-established emergency service in Jafar Ibnoaf and Khartoum teaching hospitals, which was transferred to a low capacity and poorly equipped peripheral facilities. Study informants stated that although Jafar Ibnoaf hospital has been transferred to a tertiary service, but still

there is a need to deliver an emergency service as there are dying or convulsing patients that might be referred and will need to be stabilized firstly before being distributed to subspecialty departments.

"There was a neonatology section also transferred and no knows where it used to contain incubators and highly qualified nursing staff also was shut down". (Interview 43. 18/11/2015).

The transference of the medicine department from Khartoum teaching hospital affected the delivery of trauma service, which is highly demanded in medicine consultation and other departments as stated by study informants.

6.8.2 Quality of health services

6.8.2.1 Poorly qualified junior staff

Study participants described the healthcare staffs in the peripheral facilities as junior doctors mainly, house officers and are poorly qualified as doctors in healthcare centers and peripheral hospitals, due to qualified staff leaving, either to the private sector or overseas. The presence of poorly qualified staff in the facilities led to the appearance of abuse of investigation tools due to poor clinical skills (interview 1. 2/10/2015).

Study participants argued that after devolution, misdiagnosis became a phenomenon. For example, there is a narrative that a patient has been diagnosed as having a virus in the gut, his/her situation worsened, and when brought to another facility, the patient was diagnosed with a rupture in the colon and unfortunately died in the ICU.

Malpractice emerged in the interview, as there was a patient with typhoid infection and the healthcare staff gave her an intramuscular injection that made her hemiplegic. And in another story there is a patient with an infected wound and staff told him that the leg has to be amputated, and he was not convinced with this treatment and went to another facility. There they cleaned the wound in the theater and he became well (interview 1. 2/10/2015).

Both community members and healthcare providers argued that there is an increasing in seeking treatment abroad after devolution and some of the community members estimated that 95% of patients now seek treatment overseas.

6.8.2.2 Fragmentation of health services

From the perceived effect of devolution on the quality of healthcare service, which was mentioned by study participants that healthcare services became fragmented after devolution as the renal service was transferred to Alacademy, and Bahri hospitals and pediatrics, medicine, and obstetrics and gynecology were transferred to Ibrahim Malik. Nobody knew where the urology or emergency psychiatry services were transferred. Ibrahim Malik did not have the subspecialty services of medicine and surgery, so study participants argued that there are no services in the peripheral facilities but, patients are referred from one place to another with an already collapsed referral system (Interview 62. 7/12/2015).

Study participants argued that the fragmentation of healthcare services led to the loss of a multi-disciplinary approach and teamwork as; when the consultation of other departments is needed the patient has to be referred to another facility. For instance, when there was a psychiatry emergency service in Khartoum hospital in cases of chronic diseases that lead to psychological instability and in cases of surgery, there was teamwork that includes many specialties to deal with these cases. The multi-disciplinary approach has been an international way of treatment and now it is being lost in Sudan after devolution as stated by one of study informants.

6.8.2.3 Poor quality control and safety system

Study participants argued that in the peripheral hospital, there is no system for quality control or safety guidelines; no training for the healthcare staff on procedures for safety.

Study participants mentioned that there is an increase in post-operative infections due to the absence of infection control as the sets of operations are being rented from other hospitals and the staffs bring the uniform from their homes and they enter the operation room without sterilization under unsanitary conditions (Interview 50. 26/11/2015).

Study participants argued that before transferring services, the job was done in high standards; they participated in international quality control programs; and had a quality department for samples. They further added that there is no quality department now because quality control requires cash flow, so if the lab wants to make a quality control test; one test would cost using four samples. Moreover, the orders cannot be placed when it is so costly, and just for maintaining quality. To do a urine test; the staff does the quality test on strips first before doing the urine test, but now they cannot afford to do it because they get half of

the strips they order as mentioned by the same study participants. Other study informants continued to argue that, the calibration of lab machines has stopped after devolution because companies did not give us the control to do the calibration, and the cause is that after a certain period, investigation machines do read out of range if not calibrated. So, the lab staff does every sample in two different labs to assure the accuracy of the investigation which takes time and leads to delay in obtaining results.

Also, another lab in the devolved facilities reuses the lab containers after washing them which resulted in many lab staff members contracting communicable infections; besides the usage of cheap commercial reagents which affected the quality of the lab investigation as stated by study informants. In addition to that, there is a huge workload, which led to an increase in the number of errors due to loss of concentration by the staff. To the extent that sometimes samples become mixed, so patients take results of other patients due to the mix up from the lab as emerged in the interviews with health care providers.

Study participants argued that the blood in the blood bank of peripheral facilities is prepared by saline only and not by albumen because, albumen is expensive which leading to the use of prepared blood that contains antibodies, which can cause reactions during the blood transfusion. In addition to that, the shaker machines are not working well that shake the donor blood, so the blood may contain coagulants that may lead to coagulation of the blood after transfusion.

Study participants argued that due to unavailability of isolation rooms after devolution, patients with communicable infections like tuberculosis and HIV/AIDS are admitted in the same ambergris with other patients. Also, there were hemorrhagic fever patients that were detected in Ibrahim Malik hospital and died in the common ambergris because there was no isolation room as well as no protective tools that enable the staff to deal with such cases.

Furthermore, study informants stated that there are multiple cases of hepatitis amongst nurses, because there is no staff vaccination in the peripheral facilities as in Khartoum hospital. Also, no masks, no safety box and not even a scientific and safe way to dispose medical waste, because it is costly; they just threw medical trash away with the ordinary trash. Also, other participants mentioned that due to shortages in the work aids like gloves, the staffs have to use the same gloves over and over again for many patients.

Many patients with renal failure had hepatitis C because dialysis machines were not sterilized. In addition to increasing in the cases of neonatal deaths due to neonatal sepsis caused by poor sterilization of the theater as emerged in community members' interviews (Interview 7. 6/10/2015).

6.8.2.4 Poor quality of health services

Study informants stated that Jafar Ibnoaf hospital became a referral hospital because it receives referral cases, but the service was not improved to be a specialty service. The staff was not trained especially the nursing staff, no new investigation tool or new subspecialty has been added after becoming a referral hospital, so the staff described the delivered service as a none emergency service nor a specialty service or something in between (Interview 58. 26/11/2015).

Study participants mentioned that the results in the laboratory of the peripheral facilities are irrational, so the patients have to repeat the results in the labs outside the hospital, which cost patients' extra money, and not all patients can afford that.

The main factor that affected the quality of service is that the service was transferred before preparation of the peripheral facilities, so the service transferred to facilities is poorly equipped and with low capacity. Therefore, the devolution was described as buildings without service due to the poor quality of the service.

Community members argued that every healthcare provider and mainly junior doctors in the emergency room applied their experimental opinions and theories because there are no treatment guidelines, and there are no guidelines for sorting out of the cases in the emergency room.

Both community members and health care providers argued that the poor quality of delivered service with an increase in the misdiagnosis led to the loss of trust in the healthcare workers, which in turn led to the increasing trend in seeking treatment abroad.

The study participants raised the issue of the poor counseling and health education service, as community members included in the study complained of the difficulty of getting any information from the healthcare staffs. Which was caused by overcrowding and staff shortage as staff has to examine and carry investigations for a huge number of patients in a limited

time. The dependence over junior doctors to deliver the service also affected the counseling service as stated by study informants.

6.8.2.5 Delay in treatment

Study informants argued that the introduction of a new emergency system in Ibrahim Malik which is separated totally from internal units' follow-up patients in the ambergris. This led to a delay in diagnosis and admission of patients. For example, when a pregnant woman who has abdominal pain is immediately referred to Obstetrics and Gynecology, she is seen and sent for investigation, whereas an appendicitis case, for example, would be returned to surgery and so on; patients rotate between departments that are totally separate from one another and from internal units. Which is time-consuming, and so patients leave the hospital and transfer to either a private facility or a traditional healer as stated by study informants. Also, Study participants' argued that patients are facing delays to have services in the national centers due to the unknown administrative authority of these centers. Especially the neurology center which has not had days in the emergency room nor has it received referred patients and the investigative tools like MRI are not available in the peripheral facilities. So patients were transferred to the central facilities to carry out the investigation and return with the unavailability of ambulance leading to the death of many patients during this process (Interview 9. 7/10/2015).

In addition to the delay in the laboratory and blood bank, due to over working and a shortage of the staff in addition to working with old machines that took hours for urgent samples, which could be done in minutes as stated by study participants.

Study informants mentioned that the transference of service to low capacity facilities with poor infrastructure was supposed to deliver services to patients from all parts of Sudan as Khartoum teaching, and Jafar Ibnoaf hospitals were doing. But with much less capacity, which has led to over congestion of these facilities with more than one patient sharing a bed, leading to a huge workload and a long waiting period, which affected the quality of service.

6.8.2.6 Disappearance of health services

Study participants mentioned that the implementation of devolution and transference of service to peripheries was associated with the disappearance of some services from the Khartoum locality such as the emergency dialysis service. Which was transferred from Khartoum teaching hospital to Bahri hospital; which is considered as a central hospital and

raised questions by study participants about the aim of transferring service from a central hospital to another central hospital in another locality, while this service is an emergency service and is not found at all in that locality? Moreover, the psychiatry emergency service was transferred from Khartoum hospital and has not been substituted in any hospital in the Khartoum locality, so patients are being transferred to Bahri and Omdurman localities as mentioned by study informants (Interview 76. 29/12/2015).

Moreover, study participants stated that the emergency urology service was transferred from Khartoum hospital and has not relocated in any hospital within the Khartoum locality. In Alacademy, there is a cold service for urology, but the study participants stated that if there is an emergency case and urology specialists are called, they did not attend to see the cases and patients suffer to find a facility with an emergency service as mentioned by study informants.

Study participants mentioned that the periodic maintenance of machines has been lost after devolution, so the device that separates plasma and platelets is not working which led to the loss of the plasma and platelet transfusion service in the peripheral facilities. So these facilities are dependent on the central blood bank which is time-consuming and could result in death for critical cases.

6.8.3 Affordability of health services

Unaffordability of the service was a commonly emerged theme in the interviews of many of the study participants. Community members stated that unaffordability of the service cost led to a delay in treatment as the drug and investigation prescription was being thrown away. Also, healthcare providers emphasized that the whole time, they were trying to find a way to bring drugs and investigation costs for patients and sometimes patients may be admitted for extra days due to unaffordability of the cost. ICU and newborn services are also unaffordable even in the public facilities due to a shortage of these services which cost 1500-2000 SDG.

"After seeing a doctor, drugs are very expensive, more than 30 SDP. So it took me 4-5 days to get money". (Interview 2. 2/10/2015).

"In this country, you may need to sell your house to cover hospitals' bills". (Interview 21. 17/10/2015).

Some of the study participants argued that after transference of services, the health facilities became far away from them which added additional cost to the cost of service, which is the transportation cost and peripheral facilities have not direct transportation lines and with busy

roads. That means private transportation which exceeds the cost that the reason why some of the study participants preferred to go to the private sector. In addition, fragmentation of the service led to the geographical scattering of the service with the collapsing referral system, the demand for transportation and private ambulance became high leading to unaffordability of the service. Also, discharging of the patient from the hospital by the relatives before completing treatment became common due to unaffordability of the cost of service (Interview 8. 7/10/2015).

Study participants mentioned that after devolution, the consultation service also increased in the public services from 17 SDG to 50 SDG. So the study participants stated that it became unaffordable to go to the peripheral facilities, while the consultation service cost in the private sector is very high and varies according to the facility.

Some study informants stated that there is an increase in cases of self-treatment after devolution due to the high cost of the service, some of the community members said that they go directly to the pharmacy and self-medicate. Moreover, healthcare providers mentioned that there is an increase in the number of patients that come to the lab, request the investigation for him/her, then go to the pharmacy, and self-medicate.

6.8.4 Changes in outcome

Study informants explained that as a result of the closure of the emergency service and denial of life-saving services, some patients died in front of the Jafar Ibnoaf and Khartoum teaching hospitals, and some of them died on the way to the peripheral facilities.

In Khartoum teaching hospital there was an emergency room for prioritization and sorting out of emergency cases, but it was closed during the process of the devolution implementation; so some cases of asthma were found died in their cars while waiting to see the doctor as stated by study informants (Interview 40. 17/11/2015).

Study informants mentioned that after the closure of the dialysis center in Khartoum hospital and its transferal to Alacademy hospital, 34 patients died, and one of them was from theater support workers in Ibrahim Malik hospitals because of not doing renal dialysis for more than two weeks. When the neurology and medicine departments were transferred to Ibrahim Malik, many patients died in Ibrahim Malik due to the transfer of service before preparation of the departments and availability of drugs and work aids as stated by study informants.

Study participants argued that there is an increase in the number of children and maternal mortality rate, mainly during labor to the extent that every day, there is maternal death during labor. There are also incidents of neonatal death from neonatal sepsis due to poor sterilization of the theater. In another narrative, one patient died in Ibrahim Malik's emergency room due to unavailability of the oropharyngeal tube and another died in the trauma reception of Khartoum hospital due to unavailability of a chest tube; a child died in Bashair hospital due to unavailability of oxygen as mentioned by study informants.

Also, study participants argued that patients have a long waiting time, due to unavailability of investigation tools in the peripheral facilities, so patients come to the emergency street in the center to make investigations and then return to the peripheral hospitals to be referred again to the central facilities. This vicious cycle is time-consuming for patients and led to increasing mortality rates.

6.8.5 Health insurance

Study informants perceived that health insurance has not played a major role in facilitating the access to the healthcare service due to the following factors:

6.8.5.1 Expensive membership fee and eligibility criteria

Study informants mentioned that the insurance membership fee is expensive which costs a monthly price of up to 75 SDG and 167 SDG as a subscription fee. In addition, the monthly fee has to be paid regardless of the usage of the insurance card, so the fee should be calculated according to the usage of the insurance card. So study participants argued that for those reasons they are not motivated to be members in the insurance scheme.

Community members argued that they do not have insurance, because they are not working in the formal sector like employees in the governmental facilities, nor do they have a pension. And

the insurance card of the poor is under the control of the Zikat Chamber which needs either political support and/or other types of an intermediary to have it.

Study participants argued that the health insurance for the informal sector is under the control of the popular committee which gives the insurance according to loyalty, so an intermediary is also needed to have the health insurance membership (Interview 18. 15/10/2015).

6.8.5.2 Majority of costly services are not covered

Study participants mentioned that the insurance covers only the cheap drugs while the expensive drugs that need to be covered are not. In addition, even for the covered drugs, some participants argued that the discount in the price is very minimal. And these cheap drugs are the bad quality drugs which are made in Sudan. In addition, the health insurance does not cover the cost of surgical operations and ICU admission costs as stated by study informants.

"95% of expensive drugs aren't covered by insurance. Drugs that cost 2SDP are covered while those costing 50 SDP are not. Insurance is useless". (Interview 1. 2/10/2015).

In addition to that even these cheap drugs could not be found in one pharmacy and the patient has to search for them, so when the consumed time and cost of the transportation calculated, it is better to take the drug from a commercial pharmacy without insurance as argued by one of study informants. Study informants mentioned that in some facilities, the insurance window opens only from 8 Am to 3:00 Pm and some facilities are not covered by insurance like the pharmacy of Alacademy hospital. In some healthcare centers, community members stated that only a limited number per day are seen by insurance and the rest have to pay a full fee even if they have insurance.

Study informants mentioned that bureaucracy handicaps the insurance service; it has time-consuming procedures and ends up with a five SDG discount, so some insurance members withheld their membership. In some healthcare centers, patients who do not have insurance are denied from getting treatment according to state's ministry of health order as stated by study informants.

Community members argued that insurance companies' debts to the health facilities led to withholding of some facilities for treatment by using health insurance, especially for

Subspecialties like ophthalmology.

There is a high discrepancy in regards to treatment services between public and private insurance companies as; private companies offer full coverage for all family members, including admission cost in facilities inside the country and abroad, treatment and tickets for traveling as emerged in community members' interviews.

6.8.6 Changes in community relations

Study informants explained that the high cost of the health service led to changes in the community relations as the cost of treatment is collected from the patient's relatives. Even those who have no family, ask for community support and donations; it became very common to hear a knock on your door step and when answered, there will be a person asking for support for treatment. Also, occurring in mosques where patients similarly reach out to worshippers hoping to get financial support for treatment (Interview 9. 7/10/2015).

Also, study informants said that there is an increase in the NGOs that work directly with patients like "Shariaa Alhawadith (emergency street)" they support patients by drugs and investigation prices as well as the transportation cost and food. "Shariaa Alhawadith (emergency street)" activists also work to support the infrastructure of the healthcare facilities; they've established a fully equipped ICU in child healthcare hospitals in Omdurman because they perceive the shortage in ICU service as the main cause of children mortality.

6.8.7 Access to health care services

6.8.7.1 Intra-regional inequalities in access

Study participants argued that the transference of service from the central facilities to the peripheries led to intra-regional inequalities in the access to the healthcare service. As community members around the central facilities perceived the peripheral facilities are far away from them, so it is almost impossible for them to have access, whereas citizens around the relocated services get improved access after devolution.

"Why should I have to go to Ibrahim Malik or Alacademy while the nearest facility to my home is Khartoum Hospital? Where can I be treated now? In my area there is only a poorly equipped healthcare center and many private facilities". (Interview 22. 19/10/2015).

Study participants argued that PHC facilities became nearer to the community. However, the devolved hospitals became nearer for some areas, and other areas, people realized Khartoum and Jafar Ibnouaf hospitals are the nearest facilities to them. In addition to that, the location of the peripheral facilities away from the regular direct transportation line at busy roads emerged as barriers from accessing health services as perceived by the study informants.

Study participants realized that Khartoum and Jafar Ibnoaf hospitals were easier to access, due to their strategic location at the center of the capital, in an area of the junction of different transportation lines. So patients could reach these hospitals from peripheries by one public transportation vehicle as far as from other states in Sudan, while the peripheral hospitals are located in the southern region of Khartoum locality and not easy to reach them, especially from other states as stated by study informants (Interview 1. 2/10/2015).

Study participants argued, that as the peripheral facilities are of low capacity and overcrowded, the intermediary facilities became necessary to access in order to save waiting time in the facility, and to aid in referral to another facility; the patient might also need an intermediary intervention.

Facility opening time was observed by study informants, as an important barrier from accessing healthcare service as PHC facilities are open only during the day and do not work on the weekends. And no one knows when he/she will become sick, so the healthcare service is needed throughout the day, some facilities open only until 12 Am.

"As I told you, the center isn't open and provides no service. Even in the morning, you don't find anyone after 12 am". (Interview 10. 9/10/2015).

There is a discrepancy between rich and poor people in seeking treatment. The poor resort to desperate measures such as begging for money to acquire healthcare services within the country and suffer to find any; whereas rich people travel abroad for treatment as stated by community members.

One of the study participants realized racism as the barrier to accessing healthcare services in the facilities.

Study informants argued that the utilization of hospital surgical services decreased after devolution due to the privatization of the surgical services, increasing the cost of antibiotics. Moreover, the healthcare staffs prefer to perform surgery in the private sector due to low pay by the public facilities and no bonuses for surgeries in the peripheral facilities and even no psychological motivation for staff effort (Interview 10. 8/10/2015).

6.8.8 Traditional health services

Study participants argued that there are beliefs in Sudan that traditional healers" Basier" treat fractures and dislocations better than the medical doctor, so they prefer to access traditional

healers, and there are good experiences with traditional healers that support these beliefs. Another factor which is stated by study informants that leads to accessing of traditional healthcare services is that they avoid the disadvantages of biomedical healthcare services such as unavailability of healthcare staff and long waiting time in the biomedical facilities (Interview 18. 15/10/2015).

Study participants argued that the media plays an important role in increased use of traditional healthcare services, as an advertisement on television for children with the inability to walk and they start to walk again after taking herbal medicine, which was the reason, for one of the study participants for using herbal medicine. In addition to that, being disparate from biomedical services also played a role as well as, the religious related idea about the benefits of the herbal medicines, that they are harmless also played a role as emerged in the interview data. There is poor quality and accessibility of the antenatal care, as in a narrative, the mother had the previous history twice with babies having brain atrophy, but that was not recognized by the child healthcare specialist, and she had no access to antenatal care during pregnancy. Due to a lack of knowledge, the baby was misdiagnosed as calcium deficiency and received treatment for years.

In the Nile company for herbal medicine the patient received different types of traditional medications such as hydrotherapy (treatment by water), and electrical therapy. When these two treatments have not led to an improvement, the patient is referred to a bloodletting section and finally to the department of physiotherapy for treatment with infrared rays. The staff in the Nile company are child healthcare specialists as described by the study participant and as stated by study informants (Interview 20. 16/10/2015).

7. Discussion

This study is about the process of devolution implementation as perceived by the study participants, and its consequences on access to health services for the community, the job satisfaction of health workers (See Figure 17).

The chapter will discuss the findings mentioned above in the light of the available literature in four sections, the process of devolution implementation, the perception of change in access to health services by community members, the perceived changes in the job satisfaction, and private sector strengthening.

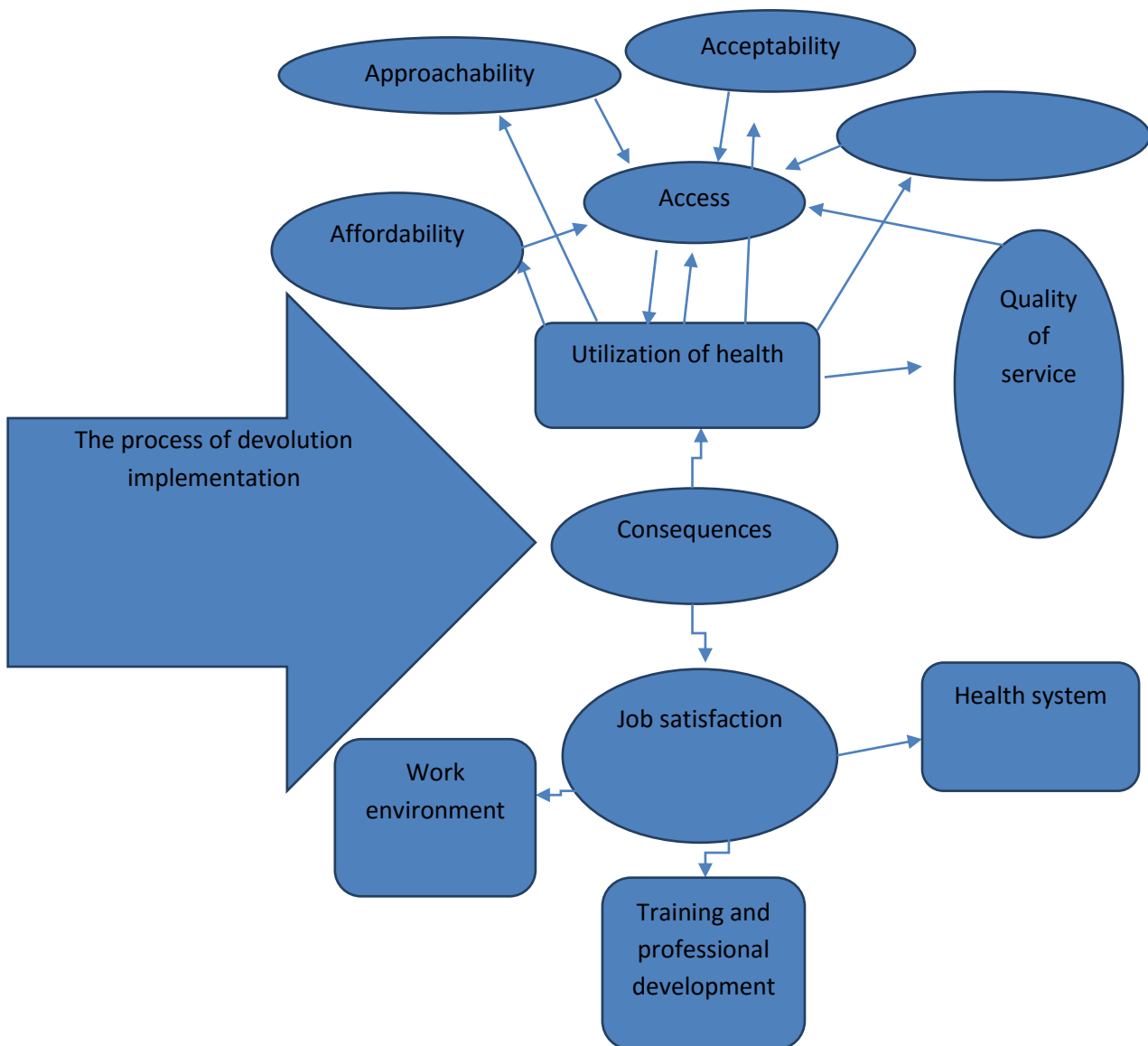


Figure 17 Summary of the study findings.

7.1 The process of devolution implementation

Implementation is the process of converting the policy goals and objectives into realized outcomes. The process of implementation is influenced by the decisions that made during the stage of policy design and formulation (Grindle. M, 1980). Grindle (1980), also stresses that implementation also influences policy outcome. As stated in the introduction, we can observe intermediate outcomes as resource allocations, planning, and organization of the policy being realized.

This study shows a consensus among study participants that the devolution decision was a political decision, not technical nor based on a scientific study. It was part of the federal decentralization and supported by the constitution of 2005, which clearly divided the responsibilities between the federal and the states levels. The federal level for the formulation of policies and regulations while the daily activities of service delivery became the state's responsibility.

This study reveals that only Khartoum state ministry of health conducted the implementation of the transfer of services without monitoring from federal level or higher authorities. Stakeholders' inclusiveness in managing health service delivery, including the space and depth of citizen participation in prioritization, planning, resource allocation, and monitoring of the implementation was not taken care of.

Based on the study findings, stakeholders were not part in the decision-making. Interview data suggest that child health association was involved in the discussions about the practical ways to execute the policy advised the ministry to transfer the service after the peripheral facilities (PHC facilities and hospitals) were properly prepared., but were overruled by the ministry.

Other study participants who were actors in the process were informed about the decision and prevented from the participation in any discussion about the decree as the decree is presidential and its discussion considered a crime. In addition, the interview data suggests that some health workers were misinformed about the devolution, and believed that it would not include the transfer of service but the improvement of the facility (Khartoum teaching hospital) to a referral facility. Opinions referred to the interview data reveal that the process of the devolution implementation was guided by hidden aims such as the privatization of the health services, selling the land of the hospital (See results chapter).

Opinions referred to in the interviews reveal health workers were forced to leave the central facilities to the peripheral facilities. Health workers reacted to the devolution decision with resistance in the form of strikes and demonstrations in Jafar Ibnoaf and Khartoum teaching hospitals. Demonstrators faced violence from the state ministry of health, who used police and gunfire to transfer services to the peripheries. The staff resistance and demonstrations against devolution decree have been supported from Philippines and Nicaragua (Anne_Emanuelle Birn, 2000; Riita-Liisa Kolehmainen-Aitken, 1999).

This study finds that there was no transparent vision or plan for the process of implementation, which took place in a top-down manner and without the involvement of stakeholders. This type of policy implementation has been clarified by the following literature:

(Walt.G, 1994) Points out that the implementation is the most important part of the policy process as the way of the implementation to a large extent determine the policy outcome. Furthermore, the top-down way of implementation is described as a military approach and occurs in highly political policies when the relation between different governmental levels is an authoritarian relationship.

A key resource that should be in place for the successful implementation of health policy is the political resources. Walt (1994) argued, “The political resources include legitimacy, the stability of the government and the possibility of policy opposition if the policy affects important interest groups and the position of elites. The way of implementation is the net result of the power differentials of different actors and interests of different actors and the way they achieve these benefits and the characteristics of the regime within which different actors interact” (Walt.G, 1994).

Another factor that can affect the implementation of the policy is the lack of pre-requisite conditions for the implementation of the devolution such as the availability of financial and human resources, power relations, the availability of political and administrative resources and the overall feasibility of the policy which emphasized by other literature (Rondinelli, 1981). Furthermore, the political context in which devolution was taken place, which represented in the political character of the regime in the power, which is military, came to power by force. And was aiming from federal decentralization to legitimize their presence in the power but without democracy and citizen participation (Grindle. M, 1980; Grindle. M and Thomas.J, 1991).

Similar decision making and implementation process in the Philippines and Botswana, Nicaragua and Papua New Guinea are also known to have taken place without the involvement of stakeholders. In the Philippines where devolution took place, the stakeholders were not even enlightened about the transfer of service. Which resulted in resistance from stakeholders and demonstrations (Bossert & Beauvais, 2002; Mills.A, 1990; Riita-Liisa Kolehmainen-Aitken, 2004). Furthermore, the devolution policy in Sudan was not based on an agreement from the National Congress, and there was not a debate about it (FMOH, 2015). This also has happened in the Nicaragua experience of decentralization implementation, where it was done to speed up the country's response to international donors' requirements (Anne_Emanuelle Birn, 2000).

The ministry also used misinformation and allegations to transfer the service like contamination of hospital departments by bacteria. Media and rumors were used to make more pressure on the health workers to force them to agree to the transfer of service.

In addition to the shaping of the devolution and its outcomes by the violent implementation the transference of the health staffs also has other disadvantages such as they transfer the culture of centralization with them. As emerged from this literature (Transfer of the staff from the central level to the devolved units would transfer staff with high skills to the local level but also transfers highly centralized structure, culture, and routines to the local level (Bossert & Beauvais, 2002).

This study reveals a conflict of interest between the federal and Khartoum state levels manifested in the authority over the tertiary facilities and specialized services, which were transferred to the state level. Furthermore, the devolution resulted in the inability of FMOH to do its roles, which are intervention in cases of epidemics, emergency, and expansion of services and training of the health workers. As the health, workers and health institutions are under states authority, but with the absence of a clear mechanism for coordination between the different levels. Conflict of interest also emerged from other experiences of decentralization such as:

There was strong resistance from the DOH and government health care workers due to the exclusion of DOH from the planning stage of devolution, and furthermore, for the loss of power and control over the health sector (Bossert & Beauvais, 2002).

Sudan's experience of distribution of responsibilities is unlike the experience of other countries, such as the Philippines, where also devolution of health services divided the responsibilities between the federal and the state level. The federal level is responsible for the delivery of specialized services; the management of human resources and drug supply were concurrent responsibilities between two levels (Riita-Liisa Kolehmainen-Aitken, 1999). While in Sudan, all these responsibilities were transferred to the state level as stated by in-depth interviews participants, which supported from a paper from FMOH (FMOH, 2015) stated that:

The authority has been transferred without a clear definition of the responsibilities of the different levels, an assessment of whether they have the capacity for such responsibility and without a clear determination of the mechanism of coordination between different levels. As in the case of medicines control regulation in which the responsibilities of different levels are contradicting which led to a conflict of interest between the federal and the state level.

Also, a review of the decentralization experiences demonstrated (Riita-Liisa Kolehmainen-Aitken, 1999) argues that unclear definition of the organization structures, roles, and responsibilities between different levels of the health system are the most problematic issues.

Riita-Liisa Kolehmainen-Aitken (1999), argued that the implementation of the decentralization could be explained by the decision about the nature of decentralization and politicians have determined the degree of transference of the authority, and the role of private and public sectors as. The opinion referred to the interviews shows that over transference of responsibilities without assurance of managerial and financial capabilities, and without the involvement of other actors (local and federal levels) mainly in the transference of service to peripheries. Furthermore, the extent of transfer of responsibilities and authorities and the way of coordination between the federal and states level also has not determined in a precise way. That led to an over-powerful of Khartoum state as the beneficiary of the policy, which worked to retain responsibilities through controlling the allocation of resources during the process of devolution implementation.

While in theory, such a system of decentralization in the devolution form is expected to have positive impacts on the efficiency and equity of public service provision. In practice, these outcomes depend upon the existing institutional arrangements (including power relations) and coherence of devolution/ decentralization policies to create the proper incentive environment for bottom-up accountability that was not taken care off in Sudan case. The main issue in the

implementation process is accountability mechanisms to ensure professional technical and community responsiveness and accountability (among others), which was lacking in the whole process.

7.2 Perceived effect of devolution on access to healthcare services

The discussion focuses on dimensions of the access to health services and considers insights into the perceptions of changes in these dimensions as a consequence of the implementation of devolution using the triangulation of quantitative and qualitative methods.

7.2.1 Accessibility of health care services

The access, affordability, and quality of services have deteriorated after the implementation of devolution, while the availability of health workers has improved as perceived by study informants.

This study reveals that devolution of health services associated with deterioration in the access to health care services (See Table 8. P 80). What are the factors that participated in this significant drop in access to health services after devolution as perceived by study participants? These factors can be explained by the opinions referred to the interview data about the perceived changes in the access to health services.

Decentralization in Nicaragua has associated with the breakup of the universality of health care service and decrease access to health service especially access to primary health care services such as prenatal and vaccination coverage dropped by 50% from 1993 - 1996 (Anne_Emanuelle Birn, 2000).

This study reveals intra-regional inequities in access to health care services as study participants in the areas around the devolved facilities claimed that their access to health services has improved after devolution. While study participants from other study areas argued that, their access has deteriorated. This finding has been supported by another study in Ghana, and Tanzania (Kwoyiga, 2010; Masanyiwa, Niehof, & Termeer, 2013). Other studies explained the mechanisms by which decentralization resulted in this finding, as variations in managerial, financial, human resources capabilities between different devolved units and areas led to intra-regional inequalities (Riita-Liisa Kolehmainen-Aitken, 2004).

The transference of services before the preparedness of the peripheral facilities resulted in the inadequacy of the service in the peripheral facilities. Which further worsened by the low

capacity of peripheral facilities (total beds in Khartoum were 1100 and in Ibrahim Malik not more than 150) as emerged from the interview with both community members and health care providers. There was also the low capacity of ICU and newborn services and lack of specialty services in the peripheral facilities. Unavailability of the diagnostic tools (CT scan and MRI) in the peripheral facilities and their distance from the diagnostic facilities in the center.

The qualitative data also shows that the capacity of the referral hospital was decreased after devolution (489 beds decreased to 196 beds in Jafar Ibnoaf hospital). Before devolution, patients from Khartoum state and other states could depend on the federal facilities to have the necessary emergency, secondary and tertiary services, which were transferred to low capacity poorly, equipped peripheral facilities under the authority of Khartoum state, which hampered the access to these services for both Khartoum states and other states patients. Also, the opinions shared in the interviews also reveal the importance of delivering emergency service with good staff and equipment in the referral facilities as the referred patients from peripheral facilities might be dying or convulsing and would need stabilization firstly.

7.2.2 Affordability of health services

The affordability of health services in general, and the affordability of consultation, drugs, investigation have deteriorated after devolution as perceived by the study informants.

This study reveals that after devolution, a significant decrease also in affordability of health services from 54.1% to 20.3% of study participants was observed ($P < 0.01$) (See Table 8. P 80).

This study shows that unaffordability of consultation services is associated with paying more than 50 SDG per facility visit, being user fee consumer, paying more than 1000- 4999 SDG annually (See Table 9. P 81).

The adjusted model also showed that individuals who were paid > 50 SDG/facility visit were 7.36-times likely to say that affordability of drugs has deteriorated compared to those who paid < 50 SDG. Being a user free customer increased the odds of deterioration of affordability of drugs by 1.37. Participants who paid for health services annually 1000- 4999 SDG are 1.77 more likely to say the affordability of drugs had deteriorated (See Table 10. P 85).

The adjusted model showed that individuals who were paid > 50 SDG/facility visit were 4.70-times likely to say that affordability of investigation has deteriorated compared to those who paid < 50 SDG. Being a user free customer increased the odds of deterioration of affordability of investigation by 2.75 (See Table 11. P 84).

What are the factors that resulted in the perceptions of deterioration in the affordability of health services? The interview data offers insight in to these factors. The unaffordability of health services increased in the consultation service fees in the public facilities from 17 SDG to 50 SDG. In addition to that, in order to avoid accessing the child health service in peripheral facilities, patients started to access the private clinic of specialists that are working in Jafar Ibnoaf hospital in order to be referred directly to Jafar Ibnoaf. Opinions referred in the interviews with health workers show that the poor quality of investigation in the peripheral facilities also contributed to this unaffordability as patients repeated investigations in the private sector. Moreover, the assignment of junior staff with poor experience led to abuse of the investigation and increase of the costs.

The unaffordability of drugs emerged in the form of the changes that happened after the transfer of pharmaceutical management responsibilities from the federal level to the state level. The drug supply system in the state is known as the push system, which sells medicines and supplies to the facilities by 5% profit, resulted in the increase in the price of the drugs. The cut in the budget of drugs and supplies after devolution resulted in that even life-saving drugs and work aids should be paid by the citizens. In addition to the privatization of child health, maternal health services, and surgical operations also resulted in unaffordability of the services, as stated in the in-depth interviews.

Fee exemption policy and health insurance have been implemented to remove cost-related barriers that hampered community members from accessing health services such as fee exemption policy. This study shows that the fee exemption policy is not working after devolution due to a cut in the budget that stopped the free treatment for vulnerable groups and children under five years.

The utilization of health care service has been decreased due to unaffordability of user fees (Kwoyiga, 2010). The same finding of the effect of user fee also was supported by additional studies from Uganda and Tanzania. Which have mentioned that user fee was related to decreasing access to health service especially among vulnerable groups, like the poor.

(Anokbonggo, Ogwal-Okeng, Ross-Degnan, & Aupont, 2004; Masanyiwa, Niehof, & Termeer, 2013).

Furthermore, the interview data with both community members and health workers also suggest an increase in the self-treatment as a manifestation of the unaffordability of health care services, as patients take drugs directly from the pharmacies. And to avoid seeing a doctor patients tend to request an investigation for themselves and took treatment from pharmacies which indicate the unaffordability of consultation service fee which has also emerged in a study about decentralization in Nicaragua (Anne_Emanuelle Birn, 2000).

Other sources of support were also outsourced, like the support of internal pharmacies for the treatment of vulnerable groups after the transfer of internal hospitals authority to CDF as stated by health care providers and policy makers. This finding has been supported from other contexts such as Ghana. Even policies that have been implemented to increase utilization of service like exemption of fee for vulnerable groups could not achieve the purpose due to problems in implementation as well as inadequate funding (Kwoyiga, 2010).

This study also shows that majority of study participants in the questionnaire interview 272 (65.1%) paid for health care service by the user fee, while 146 participants (34.9%) had health insurance (See Figure 7. P 85). The low population coverage by insurance in Khartoum locality can be clarified by the following factors that emerged in the in-depth interview data:

Opinions referred in the interviews with community members reflect that the eligible populations for the insurance schemes are population groups that are working in the formal sector or have pensions from the formal sector. There is another form of insurance card for low-income families which being issued by popular committees and Zikat Chamber. These institutions give insurance card according to loyalty so intermediary should be needed which led to that the insurance card being unequally distributed. Furthermore, the insurance covers only cheap drugs and not the expensive and even for the cheap drugs the discount that made by the insurance is very narrow. Also, surgical operations and the admission to ICU are not covered.

Moreover, compared to the wasted time and transportation cost trying to buy cheap drugs of poor quality, patients find themselves better off in getting drugs from the commercial pharmacies without the insurance as stated in community members' interviews. In some

facilities, the insurance service works only during the day such as the health centers and Alacademy hospital as stated by both community members and health care providers. In addition to that, some insurance facilities were closed during the implementation of devolution such as Salmaat Center, which affected the accessibility of the insurance service as stated by health care providers. Also, the bureaucracy of the insurance and withheld of the insurance service in some hospitals due to the accumulation of debts, forcing some insurance members to cancel their membership as mentioned by both community members and health care providers. All reasons mentioned above led to low insurance membership, and so the insurance has not played the expected role in facilitating the accessibility of health care services under devolution of the health system.

The role of the insurance in facilitating access to health care services within the decentralized health system has emerged in studies from Ghana and Tanzania. As a response to the introduction of user fee, the health insurance scheme (HIS) has been implemented in an appreciable number of countries where decentralization took place.

The low population coverage by HIS due to high cost prevented health insurance from playing a crucial role in solving the problem of unaffordability of health services (Kwoyiga, 2010; Masanyiwa et al., 2013).

7.2.3 Availability of the health services

This study discloses that before devolution, 88.8% of the study participants said that health facilities were available near to them. However, after devolution, a slight drop in perception of 82.1% was observed. The percentage of those with no facility near to them increased from 11.2% to 17.9% of the study participants. Before devolution, 30.6%, said drugs are regularly available in their facilities compared to 69.4% of study informants who reported no regular availability of drugs. Before devolution, 90.9% of participants perceived the distance to health facilities to be less than 5 Km from their home which decreased to 78.2% after devolution (See Table 10. P 83 for all above figures). This is surprising finding when compared to another literature from Ghana as mentioned above.

The perception of the decrease in the availability of health facilities and the distance of the health facilities from home after devolution could be explained from opinions referred in the in-depth interviews with health workers and community members. As the process of the implementation of devolution was associated with the closure of many child health departments such as Haj Alsafy hospital. In addition, to the closure of health centers such as

Salmaat and Saggana health centers and reverse transference of some services from the health center to the hospital. In addition, there has been a closure of some health centers (Soba, Aloshara) due to staff shortage. Moreover, the transference of service from the center to the peripheries resulted in intraregional inequities as the community members in the central and nearby regions perceived the peripheral facilities far away from them, so their access has deteriorated.

In Ghana, and Tanzania decentralization has been associated with an increase in access to health care services due to the increase in the availability of health facilities (Kwoyiga, 2010). And the decrease of the distance of facilities from home to 5Km (Anokbonggo, Ogwal-Okeng, Obua, Aupont, & Ross-Degnan, 2004; Anokbonggo, Ogwal-Okeng, Ross-Degnan, et al., 2004; Masanyiwa et al., 2013). Also, the same study in Uganda has found that decentralization was associated with the nearness of health services to the community.

This finding has also been noted in a scientific study about the evaluation of decentralization in Sudan: Equity in accessibility of services worsened after decentralization because wealthy states only can widen the access to health service while poor states will stay with gaps in access to service (FMOH, 2015). Also from other studies in Ghana and Tanzania, decentralization has been accompanied by inter-village inequalities in access to health care service (Kwoyiga, 2010; Masanyiwa et al., 2013).

Regarding the distance of facilities from home, opinions referred in the interviews with community members show that PHC facilities came nearer to the community. There is a contradiction about the distance of the devolved facilities from home. Some study informants perceived the devolved hospitals became near to some areas whereas other study informants realized Khartoum and Jafar Ibnoaf hospitals as the nearest facilities to them and so the devolved facilities as far away from them. Also, peripheral hospitals are located at busy roads with no direct transportation line while the central hospitals are located at a junction of the different road in the center of the capital so accessible easily from all parts of Khartoum as well as other states.

Other barriers to accessing health care services after devolution that has been revealed in the study is the facility opening time for health centers, which informants described as not suitable. Some are not open after 3:00 Pm, some centers close at 12:00 pm in addition to not being open on weekends. Which is similar to findings from another study from Ghana (Kwoyiga, 2010).

After devolution, perceptions of participants who said drugs are regularly available in their facilities significantly increased from 30.6% to 52.2%, while who said drugs were not regularly available fell considerably from 69% to 47.8%. Regarding the presence of health workers, before devolution participants who perceived regular availability of health staff were 55.5% compared to 44.5% who said drugs were not regularly available. After devolution, participants who said health staffs were regularly available amplified from 55.5% to 72%, whereas participants who said health staffs were not regularly available decreased considerably from 44.5% to 28% (See Table 12. P 86).

Opinions referred in the in-depth interviews with community members reveal deterioration in the availability of drugs after devolution, which is similar to what has been noticed in the above literature. But opposite to the findings of the questionnaire interview which stated improvement in the availability of drugs, and health workers after devolution which can be explained by the possible improvement in the availability of drugs and health workers in private, and NGOs facilities because in-depth interviews were more focused on the public facilities.

Poor drug availability was the finding that associated with participants' perception about change in the quality of service after decentralization in Uganda, Ghana, and Tanzania (Anokbonggo, Ogwal-Okeng, Obua, et al., 2004; Anokbonggo, Ogwal-Okeng, Ross-Degnan, et al., 2004; Kwoyiga, 2010; Masanyiwa et al., 2013). Delay in the procurement of drugs also has been noticed in Philippines experience of devolution due to the incorporation of drug procurement with other goods and services, which in the end has led to the breakdown of national drug procurement system as a result of devolution (Hume.M.R-L.Kolehmainen-Aitken.E.Villa and T.Vian, 1996).

7.2.4 Quality of the health services

This study reveals that before devolution, 42.6% of participants were satisfied with the quality of health service while 57.4% were not satisfied with the quality of service. After devolution percentage of participants who perceived satisfaction with the quality of service dropped significantly from 42.6% to 32.5% at the same time as participants, who were not satisfied with the quality of health service significantly increased from 57.4% to 67.5% (See Table 9. P 81). The deterioration in the quality of health services although the improvement in the availability of health workers and drugs could be illustrated by the following points as emerged in the in-depth interview data:

Opinions referred in the interviews with community members show that there is a shortage on the health workers, and the available staff was described as junior staff with poor qualifications as the senior staff left to the private sector or outside the country. There is no regular availability of specialists in the health centers. In addition, stopping the assignment of the resident non-specialist doctor affected the quality of services as the service delivery became dependent on the trainee doctors (house officers and deputy specialists) as stated by both community members and health care providers. The shortage in the number of health workers after decentralization has supported from a number of literature for example:

Decentralization in Uganda and Philippines was accompanied by the shortage of staff due to the narrow financial base, which was aggravated by the reluctance of doctors to work in a number of peripheral areas (Anokbonggo, Ogwal-Okeng, Ross-Degnan, et al., 2004; Hume.M.R-L.Kolehmainen-Aitken.E.Villa and T.Vian, 1996).

Also, the small staffs' salary made them committed to work in the private clinics and universities to cover life expenses which mentally exhaust them and affect their performance and so the quality of service. Furthermore, there are no clear treatment guidelines or guidelines for sorting out of patients in the outpatient clinic, which affected the quality of the service as mentioned by health care providers. All reasons mentioned above resulted in the increase of cases of misdiagnosis and malpractice to the extent that community members described it as a phenomenon, which led to distrust of the health workers. From study participants in the questionnaire interview, 42.6% had not trust on the health workers (See Figure 11. P 92), which led to an increase in seeking treatment outside the country. Increasing in seeking treatment abroad after decentralization has been augmented from Nicaragua (Anne_Emanuelle Birn, 2000).

The deterioration in the quality of health care services has supported from other settings literature such as this literature from Uganda. (Bossert & Beauvais, 2002) stated that decentralization in Uganda has accompanied by deterioration in the quality of service as 62.9 % of revenue collected from user fee has been spent in staff salaries instead of procurement of drug and equipment.

The same opinions emerged in the interviews with both community members, and health care providers show that there was a comprehensive service at one place before the implementation of devolution. However, after devolution, the subspecialty services and many emergency services have been transferred outside Khartoum locality and scattered in many

facilities inside the Khartoum locality leading to the disappearance of some services and fragmentation of the health services. Which has been supported by another paper from FMOH that stated to clarify the reasons behind the deterioration in the quality of health services: after devolution, the authority of control over health service delivery transferred to states and localities. Due to weak capabilities (human resource for health, logistics, and finance), the control over service delivery became weak which led to poor quality of health service (FMOH, 2015). Furthermore, the fragmentation of health services has emerged in the literature as one of the avoidable consequences of devolution in Philippines, Argentina, and Bolivia. (Riita-Liisa Kolehmainen-Aitken, 1999), (Herland Tejerina Silva, 2011), (Victor B. Penchaszadeh, 2010).

(Herland Tejerina Silva, 2011) defined the integrated health services which is the opposite of the fragmented health services as the health system that does not contain functional gaps in the sense that the majority of the health problems being solved inside the health system. Moreover, no overlap between different levels of the health system that means every level, plays its role. In addition, the contact level is the first level and each level has infrastructure that solves 95% of the problems.

Opinions referred in the interviews both health care providers, and community members reveal that quality control and safety system deteriorated after devolution that manifested in the increase in postoperative infections due to the absence of infection control as the sets of the operations being rented from other hospitals. In addition, the staff bring the operations uniform from home and use it without sterilization and dirtiness of the operation room.

For the laboratories before devolution, the labs were working with international quality control guidelines with quality control department in place. After devolution, the quality control has been lost because it is costly and consumes from the lab work aids, which already decreased after devolution due to budget cut. Additionally, the periodic calibration of lab machines has stopped after devolution due to the budget shortage, so machines read out of range as mentioned by health care providers. The deterioration in the quality control after devolution supported from another literature, which tried to illustrate the causes of the deterioration. Due to weak capabilities (human resource for health, logistics, and finance), the control over service delivery became weak which led to poor quality of health service (FMOH, 2015).

After devolution, the decrease in the number of health workers combined with the low capacity of peripheral facilities led to overcrowding. This huge workload is reflected in the finding that 77.5% of the community member participants in the study considering the waiting time as long (See Figure 9. P 91). 34% of the study participants reported that the wasted time was approximately 60-180 minutes (See Figure 10. P 92).

Opinions referred to the interviews with health care providers show that the introduction of the new emergency system in the peripheral facilities (Ibrahim Malik) which is separated from the internal units that are responsible from the follow-up of patients in the ambergis. Moreover, assigning of newly graduated doctors with no experience by Khartoum state ministry of health and without follow up from an emergency specialist, resulted in the delay of diagnosis and admission of the patients.

So patients are being transferred between departments that completely separated from each other and from the internal units which consume patients time, so patients left the hospital either to the private or traditional healer. Furthermore, the fragmentation of services led to a delay in treatment as patients being referred from place to another and with the collapsed referral system (See results chapter) further increase the delay of treatment as mentioned by the community members and health care providers.

Also, delay in treatment in the national centers which caused by the ambiguous service delivery as these centers have not received referred patients from other hospitals or have not had delivery of emergency services as stated by health care providers. Moreover, lack investigation tools such as Computerized Tomography (CT) scan and Magnetic Resonance Imaging (MRI). So patients are being transferred to the center of Khartoum locality to do these investigations with the unavailability of ambulance lead to delay in the treatment as emerged in the interviews with both health care providers and community members.

There is a delay in the laboratory and blood bank services in the peripheral facilities due to a shortage of staff and working with broken devices that took hours for the urgent investigation, which could be done in minutes as perceived by health care providers and community members.

This study reveals that there are mortalities that occurred during and after devolution as perceived by health care providers. As a result of the closure of the emergency services and denies of life-saving services, some patients died in front of Jafar Ibnoaf and Khartoum

teaching hospitals and some of the patients died on their way to the peripheral facilities. Moreover, there are cases of mortality as a result of the inadequate health service in the peripheral facilities and shortage in life saving services such as emergency, dialysis and ICU services.

The opinion referred to the interviews with community members' state that the unaffordability of the health services led to changes in community relations that materialized in the collection of the treatment cost from the relatives and increased in the cases of begging from the houses and the mosques. This finding has also noticed in a study of the impact of decentralization in Ghana (Kwoyiga, 2010).

Moreover, in-depth interview with community members, health care providers, and NGOs representatives show that there is an increase in the NGO's supports such as "Sharaa Alhawadith" after devolution in Sudan. They have direct support to patients in the form of drugs, investigations, food, and transportation. In addition to that, they established fully equipped ICU in child health hospital in Omdurman as manifested that NGOs have had a role in direct patient support and delivery of service. This finding also has augmented from Uganda where decentralization was associated with an increase in the availability of NGOs (Anokbonggo, Ogwal-Okeng, Ross-Degnan, et al., 2004).

7.2.5 Appropriateness of the services and utilization of hospital health services

The adjusted model of multivariate analysis showed that individuals who were originally from the center of Sudan were 0.26-times more likely to say that the health service was not appropriate to their needs compared to who are originally from Northern Sudan that means service is appropriate to participants which were originally from the center of Sudan compared to North. Participants who said the facility was closed when they needed them were 3.83 times more likely to say the health service was not appropriate to their needs. Participants who said health staffs were not available were 4.05 times more likely to say the health service was not appropriate to their needs. Participants who said they did not trust on health staff were 2.78 times more likely to say the health service was not appropriate to their needs (See Table 10. P83).

Kwoyiga, (2010) Argued that unaffordability of health care service led to increasing the utilization of traditional health care service, besides citizens' beliefs that traditional healer fixes fracture and dislocations better than doctors. Opinions referred to in in-depth interviews

with community members, and health care providers reveal that there was a perceived increase in the utilization of traditional health services due to Sudanese beliefs related to the efficiency of the traditional healers which known in Sudan as (Basier) treatment of fractures and dislocation better than medical doctors. Another factor that led to accessing of traditional service is barriers to access biomedical services such as unavailability of staff and long waiting time as perceived by the community members.

The study shows the utilization of child health and maternity services in the four hospitals in Khartoum locality, Sudan. That the utilization of child and maternity health care services has dropped after the devolution of the health services (See Figure 16. P 97).

The decrease in the utilization of child health and maternity health services can be explained by opinions referred in the in-depth interviews with health care providers about the process of devolution implementation and closure of many health facilities (Salamat, Saggana health center). As well as child health departments in Albanjadid and Haj Alsafi hospitals. Furthermore, the services were transferred from high capacity well equipped central hospitals to low capacity, poorly equipped facilities. Moreover, the privatization of health services that associated the devolution implementation might hamper the utilization of health services.

A study in Apac and Lira districts in Uganda has noticed contrary to what this study mentioned that outpatient attendance (for child health and maternity services) decreased for two years of decentralization implementation and then started to increase in the third year and throughout the post-policy period. There were not changes in the child health admissions before and after decentralization. In Apac district there was an immediate increase in both inpatient and outpatient attendances after decentralization and throughout the post-policy period (Anokbonggo, Ogwal-Okeng, Obua, et al., 2004).

7.3 The perceived effect of devolution on job satisfaction

This section encompasses the perceptions of changes in the work environment and job security, training and professional development, and accommodation.

This study shows that the devolution has associated with centralization of human resources management as the firing and firing of health staff is still centralized through centralized selection committee, the only hiring of workers in the facilities has been transferred to hospital administrations after devolution as stated in health care providers' interviews. This finding has not supported from other literature, majority of literature has emphasized that the

human resources for health management has not improved under decentralization and remained weak:

There is no research evidence that decentralization has led to an improvement of human resources for health management because another study from Uganda found that the human resource management system remained weak after decentralization due to inadequate staff, poor resources, and a poorly defined relationship between the center and districts (Kolehmainen-Aitken R-L, 2000).

7.3.1 Work compensation and job security

The changes in the employment terms from permanent jobs to temporary contracts have emerged in the interviews with the healthcare providers as the cause for their job dissatisfaction. Although some healthcare workers claimed that, the temporary contract is better than a permanent job because a permanent contract is of little benefit to them. Moreover, it can prevent them from leaving the country as the Khartoum state ministry of health conditioned having permanent job with staying in the health system for years as part of staff restoring policy. This finding has supported from other settings such as:

In Latin America decentralization was accompanied by the instability of employment status that ranged from the decrease of job benefits, loss of seniority, to early retirement and change of employment pattern from the permanent employment to temporary contracts (International Labour Organization, 1998; Sia I, 2000).

Moreover, there is the easy firing of the healthcare staffs as mentioned by healthcare providers due to the above-mentioned reason that there is a change in the employment terms toward temporary contracts. The association of decentralization with easy firing of the healthcare workers has emerged in the literature such as:

Decentralization is associated with the increase in job insecurity. As cases of the unfair hiring of staff due to loss of national service protection, or even under national service protection, the local politicians' pressure and demand could lead to unfair hiring. With under privatization the staff is ruled by private labor regulation without civil service protection (Riita-Liisa Kolehmainen-Aitken, 2004).

The devolution experience in Sudan has been associated with an unfair payment system as the payment is constant and not related to the effort. And even in cases of surgical operations, there are no bonuses after the operation as reflected by healthcare providers. Moreover,

devolution associated with a decrease in the salaries and irregular payment of incentives that decreased after devolution as mentioned by healthcare workers transferred from central to peripheral facilities. Furthermore, devolution in Sudan associated with problems in the promotion system as doctors being promoted only to a second degree while other professionals in the civil service can be promoted to the first degree. Other healthcare workers were only promoted to the third degree. Moreover, the promotion is not associated with an increase in the salary. The cause of the prolongation in the promotion process is explained by study participants as being caused by the stagnation of the promotion system by the influence of politics.

This finding has augmented from other settings such as:

The health staff remuneration is an old problem in Uganda. But, the study has revealed deterioration after decentralization implementation. The problem can be summarized in the following: low salaries, delayed payment and sometimes no payment at all. Also, another study has found that systems of staff payment are highly centralized in most countries where decentralization has been applied (Bach S, 2000; Wang Y, 2002).

The staff promotion became more difficult with devolution emerging in its literature. The upgrade in career, from lower to upper levels became difficult with devolution (Bossert & Beauvais, 2002; Riita-Liisa Kolehmainen-Aitken, 2004).

This study reveals that the poor payment of the staff affected the staff morale, as community members and health workers emphasized that there are cases of escape from the work during working hours, and some study informants added that health workers are not working with the patient, and they are aiming just to collect money. This finding has augmented from other settings literature such as in Uganda devolution of healthcare service, has been associated with a decrease in staff morale as the cases of drug leakage increased and other types of abuses (Bossert & Beauvais, 2002).

This study shows that some health workers were described as sympathetic by community members because they pay for drugs and investigations for patients from their money.

7.3.2 Training and professional development

Opinions referred in the interview data reveal that the training has deteriorated after decentralization due to unavailability of the training resources and capacities in the devolved facilities such as shortage in the offices, due to low capacity, unavailability of a clear system

and curriculum for training, and a low budget for training. This resulted in the postponement of training courses, workshops, and scholarships that were available before devolution. A number of literatures have supported this finding, for example:

Career development opportunities are restricted with decentralization due to lack of training capacities at the local level and failure of the central level to distribute central training chances in an equitable manner (Riita-Liisa Kolehmainen-Aitken, 1999).

Decentralization has been associated with a reduction in training and professional development opportunities. That happened due to a decrease in the training budget, isolation from national training programs and weakness of local training (Bossert & Beauvais, 2002; Riita-Liisa Kolehmainen-Aitken, 2004).

Although some study participants from the child healthcare specialty have said what is believed to be contrary to the argument mentioned above, stating that the training in child healthcare was not affected after devolution; as the child, health association in the Sudanese Specialization Board is regulating the training activities, which is a central body.

7.3.3 Accommodation

This study reveals that the accommodation authority for female and male accommodations has transferred to hospitals, and Sudanese Doctors Union (Central body), so females lost their accommodation due to the inability of hospitals to pay houses rent. The living condition has deteriorated in both male and female accommodation due to the shortage of budget. This finding has found in the experience of decentralization in Ghana (Kwoyiga, 2010).

7.4 Strengthening of the private sector

Opinions referred to community members and health workers' in-depth interviews disclose that the devolution decree is aimed to outsource the public health services for the benefit of the private sector (conflict of interest). In addition, after devolution, patients from other states of the Sudan are forced to access the private sector due to the low capacity of the peripheral facilities. Furthermore, unavailability of drugs, work aids, inadequate service, and delay of treatment in the public sector forced citizens to access the private sector. Moreover, citizens in the marginal areas of Khartoum locality like Soba were compelled to access the private sector due to unavailability of emergency services near to them as stated by community members' interviews.

Opinions referred to the in-depth interviews show that the process of devolution implementation without the involvement of stakeholders participated in driving patients and health workers to the private sector. In addition, the number of private facilities increased after the implementation of devolution as stated by community members.

Opinions referred to the interviews with health workers reveal that privatization of health services is underpinning the health system under devolution which materialized in the following forms: there is private investment in the public laboratory after devolution, and also internal pharmacies in the public facilities were converted to commercial pharmacies after being transferred to CDF. Moreover, evening operation list was conducted in the hospitals after devolution, and gradually hospitals started to increase the evening list and decrease the morning list because the evening list is more expensive than the morning. In Jafar Ibnoaf, the treatment, investigation, and diet were free before devolution, but due to a shortage of budget after devolution, patients had to pay for it. Also, child health and maternity services in peripheral facilities have been privatized after devolution as stated in the interviews with health workers.

In some hospitals, the emergency administration received a memorandum to do not support the vulnerable groups' free treatment. In addition, internal pharmacies stopped supporting free treatment of the vulnerable groups after being transferred to the CDF authority. These changes in the drug supply system to cash and carry system have been supported by other literature from Sudan (Mohamed, 2008).

Regarding training, the most important finding as referred in the interview with health workers was the privatization of training. Trainees have to pay to the medical specialization board for their training although they also deliver services to patients. So they have to work more in the private hospitals and universities to be able to pay for training fees which affected their performance and so the quality of the service.

This study demonstrates that 29 lab technicians with contracts and three technicians in the blood bank were fired and not substituted by others, in addition to that, there are no lab technicians transferred with service to peripheral facilities which led to a shortage in laboratory staffs in the peripheral facilities. Moreover, another staff has been fired in Alacademy hospital due to infection by tuberculosis, which opens questions about the protection of staff, and job security with devolution as there is increase in the cases of the easy firing of health staff. Furthermore, changes in the employment terms from the

permanent job to temporal jobs (contracts) has emerged in the interviews with health care providers.

From the study findings, there is a decrease in the hospital budget and an end of free treatment budget for children and adult, which pushed the policy toward supporting facilitations for the private sector. This finding has been supported by another literature written by the director of Sudanese Medical Supply when he was defending the privatization of Sudanese medical supply that the privatization is a priority for the government. Based on the previous rich experience in the privatization of many public enterprises like Bank of Khartoum, Sudanese free zones, and Telecommunication in line with the World Bank recommendations and economic liberalization policy that has been adopted in Sudan (Mohamed, 2008).

The fragmentation of health services resulted in the landing of patients to the private sector as it still delivers comprehensive services. Additionally, the shortage in ICU and newborn services in the public facilities forced citizens to the private sector. Other countries' experiences show that low payment for the health workers forced them to departure in the private sector, which emerged from the literature of the decentralization in Nicaragua (Anne_Emanuelle Birn, 2000). Furthermore, Riita-Liisa Kolehmainen-Aitken, (2004) argued that uncertainty of health staff about their professional future may force them to look for a new job and to departure in the private or to leave the country.

The context of structural adjustment program packages with the implementation of cost recovery schemes, user fee, cut down in the health budget and privatization of the service have shaped the implementation of devolution toward the facilitations for the private sector and privatization of health services. As was stated clearly in an interview with a policy maker, that the financing of hospitals would depend completely on hospital resources after devolution. That means more privatization of health services to cover the cost of services.

SAP had a direct impact on the health sector in the form of a cut in the governmental allocation for health budget. Moreover, the implementation of the user fee and cost sharing mechanism as new mechanism for health finance (Suliman, 1997).

Free market economy and privatization agenda have been masked under the decentralization of healthcare services leading to growth in the number of low-income groups who left public sector to seek service in the private sector in Latin America after implementation of

decentralization (Anne_Emanuelle Birn, 2000). Furthermore, another literature from Bolivia correlates between the privatization of the health services and SAPs. In Bolivia, WB recommendations have been conducted in the health sector which resulted in the privatization of public health services, and devolution of health services (Herland Tejerina Silva, 2011).

Furthermore, other settings literature argue that decentralization was the tool that been used by WB to pass the privatization agenda, which are:

Decentralization in Nicaragua has accompanied by the creation of separate private hospital wards inside the public hospitals (Anne_Emanuelle Birn, 2000). New employment schemes such as contracts and payment mechanisms like market-related payment and special bonuses have been materialized with decentralization in many countries (Brito P, 2000; International Labour Organization, 1998).

Also, as the federal decentralization aimed to overcome the scarcity of resources by transferring responsibilities to the state and local levels. So the implementation of devolution was aimed to override the federal responsibility for supporting health by transferring it to the state and local levels which depend on out of pocket expenditure in financing health services within the context of structural adjustment program which augmented the privatization policy. So the devolution was a tool for a statement of hidden political objectives such as legitimization of the party in power which came by military coup rather than improvement of health services as also mentioned by (Elabbasi, 2003).

7.5 Strengths and limitations of the study

One of the strengths of this study that it explores the process of devolution implementation, and the consequences of the process on job satisfaction and utilization of health care services as perceived by study participants. Which has not been documented before in the context of Sudan.

Other strengths of the study originate from the use of methodology triangulation and triangulation of data collection methods, its expediency in the future implementation of similar policies and empowerment of study participants.

This study enabled the participants to be involved in the view forward to recommend recommendations for the future implementation of similar policies, which gave them the sense of empowerment.

Involvement of 100 study participants from health care providers, administrative staffs, policymakers, NGO's representatives, and community members increase the validity of the study findings due to cross check and triangulation of the study data.

From the strengths of this study that it concerned with the perceived effect of devolution on the hospital health services because little studies have been conducted in this area, and little is known about the changes that perceived in the hospital services after devolution. The majority of the studies focused on the effect of decentralization on the primary health care services. In addition, little studies have done about the changes in the job satisfaction of health care providers after decentralization.

The complexity of the study topic is one of the limitations of the study, as decentralization is entangled with the field of politics, administration, and health. Moreover, the implementation process is influenced by the political and economic context. Also, the implementation of such a policy has ripple effects on the entire health system, and the exploration of policy consequences on all these arrangements, and administrative levels are beyond the reach of a master study project due to time and resource constraints.

The sensitive topics, which related to policy and politics like devolution of health services in the developing countries influences the study participants and make them hesitant to participate which reflected clearly in the study as three health care providers apologized to take part in the study from Khartoum teaching hospital. Furthermore, five nurses from Alacademy hospital decided not to participate for the same reason.

Another risk with this type of study is that participants give broader responses than what is defined as the scope of the study which lead to a risk of information overload.

The administrative staff of Alacademy refused to participate in the study. Some of them apologized due to the political nature of the study -as the said- after acceptance to participate in the study while others apologized because the ministry of health prevented them from giving any information without ministry's permission. Moreover, some administrative staff expressed their unrecognition for the qualitative methodology, so they apologized from participating.

The questionnaire interview was based on that all primary health care facilities (PHC) are either public facilities or private for non-profit facilities, but after the field work, we

discovered there are private for profit PHC facilities in addition to that some public PHC facilities are rented for private investors.

Before and after evaluation design is affected by many externalities, so the changes that happened with devolution we cannot say that they are only due to the effect of the policy, as the confounding factors were not controlled through randomization. Therefore, this study is limited to the study of stakeholders' perceptions about the process of the devolution implementation and its consequences. Furthermore, that the stakeholders nevertheless were positioned so that they could consider the process from different viewpoints.

The aim of using qualitative methodology is being able to capture multiple realities about the devolution of health services, but the subjective nature of the qualitative where the researcher is part of the knowledge generation can affect the validity of the study findings. So prolonged engagement with participants, triangulation of data collection methods as in these study observations in the devolved hospitals with an in-depth interview for the perceived effect of devolution on the job satisfaction of the health workers. As well as methodology triangulation as for the perceived effect of devolution on the access to health services which explored by using both quantitative and qualitative methodologies and the findings were augmented by analysis of routinely collected hospital data.

The less certain part of the study findings is the process of devolution implementation because it explored only by in-depth interviews with health care providers without being augmented by another methodology of data collection, or collection of data from another study informant like community members.

From limitations of the study and qualitative design that how we can guarantee that the research captured what we intended to study, that means how we can know that the changes that reflected by the study are caused by devolution. This is in qualitative known as credibility (Dahlgren, Emmelin, & Winkvist, 2007). Some techniques that can be used to improve the credibility such as the prolonged engagement in the field which enables the researcher to build confidence with study participants and so to capture their truth and the multi-realities of the study topic. Furthermore, observations, using the methodology, and data collection triangulations can improve credibility. The researcher used all these techniques in order to improve the study credibility.

From limitations of the qualitative methodology is the transferability or the ability to generalize the study results beyond the study context, as the qualitative depends on small sample size (compared with quantitative), and the way of the sampling in qualitative does not care about the demographic representation of the target population as in quantitative.

8. Conclusion

This study is about health policy changes in an African setting and provides an in-depth analysis of the consequences of policy while implementation is taking place. As decentralization has become a global trend to increase access to healthcare services and cost-effectiveness of service delivery. The process of implementation takes place in a setting where structural adjustment program packages have already embraced privatization.

This study has used a combination of quantitative and qualitative methodologies, to explore both healthcare professionals, and community members' experiences of the process of devolution implementation, its perceived effects on access and quality of healthcare services, and job satisfaction of healthcare workers. Several questions have guided the data collection and analysis: How did the process of devolution implementation take place? How were resources allocated? Who is involved in decision-making? Furthermore, how did the context in which the policy was implemented shape the process of the implementation? Moreover, how did the process of implementation, in turn, shape the policy contents? What are the perceived effects of devolution on the access and quality of healthcare services, and on job satisfaction of the healthcare workers?

The process of devolution implementation was forced without the involvement of stakeholders. This type of forceful implementation of the public policy was accompanied by the experience of policy implementation in contexts where the military coup is in power, or when the policy is more influenced by politics. Furthermore, the policy implementation was considered as an elite's issue, so discussion about it took place in a closed room. The first stage in Sudan, which was the federal decentralization, failed to build suitable institutions for community participation.

The political regime controls the process of the policy implementation through determining the financial resources and legislative power, which determine the local central relationship. The implemented policy may be the result of the power differences and competition for resources between different actors through controlling the resource allocation process; which is reflected on the process of the transference of the services. As it was conducted without involvement of either the federal level, or the local level; along with the conflict of interest

between the state and federal levels with the imposition of the state's power at the end as in the case of federal decentralization.

All above-mentioned factors shaped the process of policy formulation, implementation, and consequences, which resulted in the following perceived effects of devolution

The main negative effects of the devolution are the deterioration in the access to health care services, affordability of health care services, and quality of health services.

Regarding access to health care services, the deterioration is due to the deterioration of the affordability of health services which in turn has caused by the failure of the health insurance scheme and fee exemption policy and privatization of health services. Furthermore, other barriers to access the services such as the distant of the devolved facilities and their location at busy roads without direct transportation line have risen. In addition to that, facilities opening time participated in this deterioration of the access to health care services.

The opinions referred to the interview data showed the reasons behind this deterioration in the quality of services as fragmentation of healthcare services with the collapse of the referral system. Furthermore, there is a disappearance of many types of services from the study area after devolution. Besides, there is also deterioration in the quality control and safety system in the peripheral facilities.

Moreover, the work environment, job security, and training and professional development have deteriorated after devolution as stated by the study informants.

Finally, for the negative effects, we have found conclusions about the strengthening of the private sector after devolution. Of granting privatization over some functions (drug supply), there is an expansion of the privatization of the public facilities services, such as child health, and maternity services in the peripheral facilities. As a result, citizens were forced to seek care in the private sector.

From the positive effects of devolution, the nearness of the PHC services to the community, improvement in the availability of drugs and health workers after devolution, new buildings have added to the peripheral facilities after devolution and improvement in the cleaning quality of PHC facilities.

This study reveals the importance of looking at the politico-administrative context in which the devolution was implemented which included the situation of disparity in the distribution of human resources and facilities between the center and peripheries.

This study has explored in detail the process of the implementation of devolution and highlighted the importance of implementation in determining the policy consequences and long-term policy outcomes. Furthermore, this study has stated that the implementation is neglected in the Sudan's case and not planned during the decision-making phase.

The study has a limited scope and has not covered the issue of community participation. The perceptions of changes in the community participation after devolution, which involves, the community anticipating in the determination of health priorities and being involved in the management of facilities or not. Furthermore, the mechanisms by which this participation is taking place, the availability of healthcare related NGOs. Additionally, this study does not highlight in detail the organizational changes that have occurred in the structure of the FMOH, SMOH and localities as a response to the devolution of healthcare services. Moreover, this study has been conducted at only one locality (Khartoum locality) and has not involved the whole country.

8.1 Recommendations

The positives side of conducting a study while policy implementation is ongoing is that it gives a great chance to monitor the progress of the policy consequences towards the expected outcomes. Based on the findings of the study, it is possible to identify recommendations for adjusting the implementation process:

- To track the seven indicators access to care, affordability of healthcare, and quality of healthcare services, changes in the work environment, work compensation and job security, training and professional development, and healthcare system changes, after five years of policy implementation to determine the pros and cons of the policy. This makes it possible to adjust interventions while policy implementation is underway.
- Policies like decentralization need to take into the consideration the disparities between states and localities through preferential treatment by resource allocation and building capacity of the disadvantaged states and localities that have not been taken into consideration into the Sudan's case.

- In order to address the conflict of interest between the federal and state level, this study shows the importance of looking at devolution/decentralization in terms of the decisions allowed for different functions. No logistics system is fully centralized or decentralized. What we have found are tentative conclusions about the advisability of granting more local choice over some functions and retaining central control over other functions. The authority over tertiary services and specialized centers should be transferred back to the FMOH and the authority over rural hospitals to the state level. As specialized centers and tertiary hospitals, deliver healthcare services to all parts of Sudan. The drug supply system, and human resources should be at least an area of concurrent responsibilities between the federal level and states with the rigorous determination of each level of responsibility. In the drug supply system within decentralization, the center should concentrate on the defining a list of essential drugs and the establishment of regulation and quality assurance system. In regards to the human resources, the federal level should develop a strategic planning for development of human resources for healthcare with the determination of specific roles at the central and local levels.
- In order to address the fragmentation of the healthcare services and increase the efficiency of the healthcare service delivery, this study recommends that there should be a mechanism for the coordination between different levels of the healthcare system. Also, it is important to make changes in healthcare laws and regulations to overcome the contradictions at the level of responsibilities between different levels. Moreover, it is important to strengthen the referral system by training staff, and setting requirements for referrals such as guidelines, ambulances, phones for communication.
- In order to address the deterioration of the quality of healthcare services, it is necessary to establish a federal center for quality control that is responsible for quality assurance of delivered services and the availability of these services, making guidelines for treatment and sorting out of cases. Furthermore, it is necessary to deliver emergency services in the tertiary facilities as some cases might be referred dying or convulsing and should need emergency intervention that requires the availability of emergency service.

- Assignment of new healthcare workers to cover the shortage in staff, especially non-specialist residents with permanent jobs should be able to improve the quality of the delivered services.

This study also showed some important areas need further research:

- Community participation: it is necessary to explore in detail the perceived effect of devolution on the availability of the community organizations that are interested in the healthcare issues. And how the community participation is taking place, the degree of the participation, if the community's participation determines the prioritization of the healthcare, and management of health facilities or not.
- It is necessary to explore the changes in the organization structure of the healthcare system at all levels; at FMOH, states MOH, and localities. Including the changes in the health financing, resource allocation, the income generation mechanisms for different states and localities. And the mechanisms of coordination between the different levels of the healthcare system.
- The perceived changes in the utilization of the healthcare services in the rural areas, to explore the effect of the changes that happened in the capacity of services, and the effect of the closure of Khartoum teaching hospital and emergency services of Jafar Ibnouaf hospital in the health seeking behavior of the citizens in the rural areas.
- It is important to assess the healthcare insurance scheme, to determine the beneficiaries of the insurance service, types of services that are covered, and the proportion of treatment costs that are covered. The differences between the public and private insurance services and the level of satisfaction with the insurance services.
- It is crucial to assess the quality of the delivered services at the level of the primary healthcare facilities, availability of healthcare workers, and infrastructure.
- It is necessary to assess the drug supply system, ongoing changes and the relation to the availability of drugs especially life-saving drugs in the health facilities.
- It is important to assess the migration of healthcare workers, the causes of migration and the effects of the healthcare workers restoring policy.
- It is important to do an intervention by applying the fee exemption policy for the poor and vulnerable groups as the study has indicated that it is not working.

This study is important because it is a healthcare system and policy research that gives a comprehensive knowledge base to the way of the healthcare system organization and how it

has been shaped by the implementation of the policy and how the implementation of the policy has shaped the healthcare system organization. This comprehensive knowledge is what is required in the era of the fragmented knowledge and interventions, which can be the base for the empowerment of healthcare system or maybe reorganization in order to meet the requirements of the population and to improve the social determinants of healthcare. The health system should be organized for public benefit and the commons, and to meet the communities' requirements, not for market benefits or the interests of the policy elite. That means that the health system should be accountable to communities, with an adequate workforce, enough training and well-developed training institutions, and reestablishment of health infrastructure. If decentralization does not serve these interests of the national health system, it contributes to blocking it.

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APPENDIX 1: INFORMED CONSENT

PART I: Information Sheet

You are invited to participate in a study about the effect of decentralization on health services in Sudan. It is of importance that you read and understand the following information. The information given is to describe the purpose, procedures, benefits and risks of the research study. There may be some words that you do not understand. Please ask me to stop as we go through the information and I will take time to explain. If you have questions later, you can ask them of me, the study doctor or the staff. You do not have to decide today whether or not you will participate in the research. Before you decide, you can talk to anyone you feel comfortable with about the research.

Introduction

This study is designed to measure the perceived effect of devolution on health services in terms of utilization of service, quality of care and job satisfaction.

Decentralization (Devolution) means transfer of responsibilities and authorities from central government to the local government.

Access to health care is defined as the ability of individual and families to enter health facilities. It is defined by the following factors:

Availability of health facilities

Distance of facilities from where people live.

Cost sharing arrangements and ability to pay.

While the quality of health service is defined by the following factors:

Availability of drugs and medical equipment

Quality of health facility buildings

Availability of health staff.

Availability of health information.

Trustworthiness on health staff.

Purpose of the study

The purpose of this study is to measure the perceived effect of devolution on health services in Sudan, in terms of its effect on utilization of health care, quality of care and job satisfaction of health workers.

Participants

We are inviting all adults (Men and Women) household heads, and health workers, policy makers, and NGO members aiming to include a total of 419 participants, or twenty health workers and ten users (patients and co patients) from two district hospitals and two central hospitals.

People included in this study are either

1. Healthy people (household head of Khartoum locality households)
2. Health workers working in three district hospital and were working in Khartoum and Jafar Iboaf before devolution decision, as well as patients and co patients from two district hospitals in the study area.

Study procedures and protocol

The study procedures and protocol will be carefully explained to you, and if you need more information you are can freely ask whenever you would like. No procedure will be initiated before you provide consent to participate in the study.

Questionnaire

You will be asked questions concerning availability of health facilities in where you live, its distance from home and types of cost sharing schemes you have and your ability to pay service, also you will be asked about quality of health service you receive in terms of availability of drugs and medical equipment, availability of health staff and health information, and quality of health facilities buildings.

In-depth interview: You will be asked open-ended questions regarding your perceptions about the change in the access to services, quality of services, working conditions, training and professional development.

Questionnaires: You do not have to answer any question that you do not feel comfortable with. Everything that you talk about with the research staff is completely confidential, meaning that you will not be identifiable.

Potential benefits

There is no compensation for time or effort due to participation in the study, but the indirect benefit associated with participation in the study include:

- 1- Evidence obtained from this study can lead intervention in area of access to care and quality of care and utilization of health care by citizens.
- 2- Job satisfaction of health workers.

Confidentiality

Your confidentiality will be respected. No information that discloses your identity will be released or published. On papers, questionnaire, files and any information about you will have a number on it instead of your name. Only the researchers will know what your number is and we will lock that information up with a lock and key. It will not be shared with or given to anyone.

Right to refuse or withdraw

You do not have to take part in this research if you do not wish to do so. You may also stop participating in the research at any time you choose. This will not affect your relationship with the study doctor. It is your choice and all of your rights will still be respected

Whom to Contact

If you have any questions, you may ask them now or later, even after the study has started. If you wish to ask questions later, you may contact

Dr. Bandar Noory

Telephone: +249912457369

PART II: Certificate of Consent

I have read the foregoing information, or it has been read to me. I have had the opportunity to ask questions about it and any questions that I have asked have been answered to my satisfaction. I consent voluntarily to participate as a participant in this research.

Name of Participant _____ **Date** _____

Signature of Participant _____

Name of Witness _____ **Date** _____

Signature of Witness _____

Name of Investigator _____ **Date** _____

Signature of Investigator _____

YOU WILL BE GIVEN A COPY OF THIS FORM

APPENDIX 2: QUESTIONNAIRE

Questionnaire: Assessment of perceived effect of devolution on access to care and quality of care

Serial Number: ____

Personal Data

1- Gender:

1- Female () 2- Male ()

2-Marital Status

1- Single () 2- Married () 3- Divorced () 4- Widowed ()

3-Address: _____

4-Ethnic group: _____

5-Education:

1- Illiterate ()

2- Non-formal ()

3- Primary ()

4- secondary ()

5- University and above ()

6-Age

7-Occupation: _____

8-Monthly Income: _____

Access to health care service? Availability of health facilities:

9-How many persons live in this household?

10-How many children living in this household are:(write the number in the box):

1- under 5 years old () 2- 5 years and older ()

11-Do you have health facility in your area?

1- Yes () 2-No ()

If yes,

12-What is the type of facility where you get your health care service?

1-Dressing station (DS) () 2-Dispensary ()

3-Health center (HC) () 4-Primary health care unit (PHCU) ()

5-Referral hospital (RH) () 6- Private sector (PS) ()

7- Go directly to pharmacy () 8- other ()

13-What is the distance of this facility from your home?

1-less than 5 Km () 2-5Km ()

3-5 - 10Km () 4- More than 10 Km ()

14-Do you get health care service in facility in your area?

1-Yes () 2-NO()

15-Do you get the health care service for free?

1- Yes () 2- No ()

If no,

16-What is the type of payment you have in the health facility?

1- User fee () 2- health insurance ()

17-Can you afford this payment?

1- Yes () 2- No ()

18-How much do you pay to get consultation service?

- 1- Less than 20 () 2-20 – 50 SDG ()
3-50 – 100SDG () 4- more than 100 SDG ()

19-How much do you pay for drugs?

- 1- Less than 20 () 2-20 – 50 SDG ()
2– 50 - 100SDG () 4- more than 100 SDG ()

20-How much do you pay for investigation?

- 1-Less than 20 () 2-20 – 50 SDG ()
3– 50 - 100SDG () 4- more than 100 SDG ()

21-How much do you buy for health service in a year

22-Do you have regular access to health service?

- 1- Yes () 2- No ()

If no,

23-What are factors that make your access to service irregular?

- 1- Health services not available () 2- Financial constrains ()
3-irregular availability of drugs () 4- Long distance ()
5- Irregular availability of health staff () 6- lack of lab investigation ()
7-Unqualified health staff () 8-Lack of transportation ()
9-Mal treatment by health staff () 10-other ()

24-Are health facilities open when you need them?

- 1- Yes () 2-No ()

25-If there is no health service in the nearby facility what do you do?

1-referred by health worker to other facility ()

2-Seek for other service ()

3-Use home remedy ()

3-Go to traditional healer ()

4- Get treatment from pharmacy ()

26-Do the health service you get is appropriate to your needs?

1-Yes ()

2- No ()

Quality of health care service:

27-Can you rank the quality of health service that you get after devolution?

1- Deteriorated ()

2-Improved

3- Improved ()

4-Do not know ()

28-Do health workers regularly available in your health facility?

1- Yes ()

2-No ()

If yes,

29-What health worker is available in your health facility?

1- Medical assistant ()

2- Nurses ()

3-Medical Officer ()

4-Specialist ()

5- Not specifies the health care provider ()

30-Do drugs regularly available in your facility?

1-Yes ()

No ()

31-Do health related information available in your nearby facility?

1-Yes ()

2-No ()

32-Do you trust on the health staff in the facility?

1-Yes ()

2- No ()

33-Do waiting time for service in your facility is long?

1-Yes ()

2-No ()

34- How much do you wait per minutes in your nearby facility?

.....

35-Do you experience any improvement in access to service after devolution?

1-Yes ()

2-No ()

36-Has the cost of treatment become affordable after devolution?

1-Yes ()

() No

37-Do you feel welcomed in the health facility?

1-Yes ()

2- No ()

38-Are satisfied with the quality of health service you get after devolution?

1-Yes ()

2-No ()

39-What is the quality of buildings of health facilities?

1-Good ()

2-Bad ()

40-What your perception about the change in quality of service indicators after devolution?

#	Criteria	Deteriorated	Slightly improved	Significantly improved
1	Availability of drugs			
2	Availability of health facilities			
3	Distance of facilities from			

	home			
4	Affordability of consultation services			
5	Affordability of drugs			
6	Affordability of investigations			
7	Availability of health staff			
8	Quality of health facility building			
9	Availability of health related information			

APPENDIX 3: INTERVIEW THEMES FOR HEALTHCARE SERVICES USERS

Q1: What is your experience in seeking health service, or how you get health service when you or one of family member becomes ill?

Q2 How your experience has been changed after 2011(devolution of health service)?

Q3: What are three important experienced positive changes that occurred after devolution?

Q4: What are three important experienced negative changes that occurred after devolution?

Q5: Did you experience any change in quality of health service after devolution? and how?

Q6: what are most important factors preventing you from accessing health service?

Q7: What are your suggestions to improve the implementation of devolution?

APPENDIX 4: INTERVIEW THEMES FOR HEALTHCARE PROVIDERS ABOUT THEIR JOB SATISFACTION

Age

Occupation

Q1: How you experience the process of devolution implementation process?

Q2: what are experienced changes regarding your work environment (infrastructure, medical supplies and drugs) after devolution?

Q3: What are three important experienced positive changes that occurred after devolution?

Q4: What are three important experienced negative changes that occurred after devolution?

Q5: What are your perceptions of change regarding provision of health service for patients after devolution?

Q6: What is your experienced change in your professional development and training after devolution?

Q7: Do you feel satisfied about your salary? Why?

Q8: Do you feel satisfied about your job? Why?

Q9: what is your experienced change in your accommodation after devolution?

Q10: Are you more involved in decisions in administrative matters after devolution?

Q11: Is the budget for the hospital more adequate after devolution?

Q12: What are your suggestions to improve the implementation of devolution?

APPENDIX 5: INTERVIEW THEMES FOR POLICYMAKERS AND HEALTH RELATED ORGANIZATIONS REPRESENTATIVES

- 1- How you experience the process of devolution implementation process?
- 2- What are experienced changes regarding the health system (Budget, drug supply system, human resources, referral system, health relayed organizations availability).
- 3- What are three important experienced positive health system changes that occurred after devolution?
- 4- What are three important experienced negative health system changes that occurred after devolution?
- 5- What are your perceptions of change regarding provision of health service for patients after devolution?
- 6- What is your experienced change in your professional development and training after devolution?
- 7- What are your perceived changes in community organizations participation in health issues after devolution?
- 8- What are your suggestions to improve the implementation of devolution?

APPENDIX 6: ARABIC INFORMED COSENT

الجزء الأول: ورقة معلومات

أنت مدعو للمشاركة في دراسة حول تطبيق أيلولة الخدمات الصحية وتصورات مستهلكي ومقدمي الخدمات الصحية حول تأثيراتها علي الخدمات الصحية بمحلية الخرطوم. انه من الأهمية أن تقرأ وتفهم المعلومات التالية. المعلومات المقدمة الهدف منها وصف الغرض والاجراءات والفوائد من هذه الدراسة البحثية. قد يكون هنالك بعض الكلمات التي لا تفهمها. من فضلك أسألني للتوقف ونحن نمضي من خلال هذه المعلومات وقد يستغرق الشرح وقتا. إذا كانت لديك أسئلة في وقت لاحق, يمكنك أن تسألني. لا يجب عليك أن تقرر اليوم ما اذا كنت تود أن تشارك أو لا. قبل أن تقرر يمكنك التحدث إلي اي شخص تشعر بالراحة معه. يحق لك أن ترفض المشاركة أو أن تنسحب من هذه الدراسة في أي وقت دون أن تترتب علي ذلك أي نوع من الأضرار.

مقدمة:

تم تصميم هذه الدراسة لاستبصار كيفية التي تم بها تنفيذ أيلولة الخدمات الصحية وتصورات مستهلكي ومقدمي الخدمات الصحية حول تأثيراتها علي الخدمات الصحية بمحلية الخرطوم. أيلولة الخدمات الصحية نوع من أنواع لامركزية الخدمات الصحية التي يتم تنفيذها علي نطاق واسع في جميع انحاء العالم. وذلك لزيادة فاعلية وجودة الخدمات الصحية المقدمة وجعلها قريبة من متناول المواطنين, بالإضافة إلي اشراك المواطنين في ادارة المؤسسات الصحية وفي تحديد أولوياتهم الصحية أيضا.

الغرض من البحث:

الغرض من الدراسة هو مغرفة تصورات مستهلكي ومقدمي الخدمات الصحية عن تطبيق أيلولة الخدمات الصحية وتأثيراتها علي إستهلاك الخدمات الصحية والرضا الوظيفي لدي العاملين في الحقل الصحي.

المشاركين جميع البالغين من الرجال و النساء الذين أعمارهم 18 سنة فما فوق, بهدف أن تشمل 419 مشاركا الذين ستشملهم هذه الدراسة وهم:

1- أشخاص أصحاء

2- مقدمي الخدمات الصحية, واضعي السياسات الصحية وممثلي منظمات المجتمع المدني.

2- إجراءات وبروتوكول الدراسة:

سيتم شرح إجراءات وبروتوكول الدراسة لك بعناية , إذا كنت بحاجة الي المزيد من المعلومات يمكنك أن تسال كلما كنت ترغب في ذلك . وسوف لن يتم القيام باي إجراء قبل أن توافق علي المشاركة في الدراسة.

• الإستبيان:

سوف يتم سؤالك أسئلة تتعلق بإستهلال الخدمات الصحية والوصول للخدمات الصحية وتوفر هذه الخدمات وبعدها من السكن , وجودة الخدمات الصحية قبل وبعد تطبيق أيلولة الخدمات الصحية وذلك لمستهلكي الخدمات الصحية.

الإستبيان قد يستغرق حوالي 30 دقيقة لاكماله.

• المقابلة العميقة:

مع مقدمي الخدمات الصحية , واضعي السياسات الصحية وممثلي منظمات المجتمع المدني حول تصوراتهم للتغيير الذي حدث في الرضا الوظيفي للعاملين في الحقل الصحي.

المخاطر المحتملة والإنزعاجات:

لا يجب عليك الرد علي أي سؤال إن كنت لا تشعر بالراحة له . كل ما ستقوله للباحث سيكون سري تماما , وهذا يعني انه لن يتم معرفتك.

الفوائد المحتملة:

لا توجد فوائد مباشرة لصالحك من المشاركة في هذه الدراسة. لا يوجد تعويض علي الزمن المستغرق علي المشاركة في هذه الدراسة.

الفوائد التي يمكن أن تعود علي المجتمع:

الأدلة التي يمكن ان تصل اليها هذه الدراسة يمكن أن تقود إلي تدخل في مجال الوصول الي الخدمات الصحية ووجود الخدمات الصحية وايضا في مجال الرضا الوظيفي للعاملين في الحقل الصحي.

الخصوصية:

سيتم إحترام سريتك تماما لن يتم البوح أو نشر أي معلومات تكشف عن هويتك. سيتم وضع ارقام بدل من اسمك في أي ورق أو استبيان. فقط الباحث من يمكنه معرفة ماهو رقمك وسوف ستم قفل تلك المعلومات.

الحق في رفض المشاركة أو الإنسحاب من الدراسة:

لا يجب عليك المشاركة في هذه الدراسة ان كنت لا ترغب في ذلك. وتستطيع أيضا الانسحاب من المشاركة في أي وقت تشاء. وهذا لن يتسبب لك في اي نوع من الضرر. هذا خيارك وجميع حقوقك سيتم إحترامها.

بمن تتصل؟

إذا كانت لديك أي اسئلة يمكنك أن تسال الان أو في اي وقت لاحق, حتي بعد بدء الدراسة. إذا كنت ترغب في طرح الأسئلة في وقت لاحق, يمكنك الإتصال

الدكتور بندر صلاح نوري

الهاتف: 0912457369

الجزء الثاني: شهادة الموافقة

لقد قرأت المعلومات السابقة, أو قد تمت قراءتها لي. وقد أتحت لي فرصة طرح الأسئلة حول هذا الموضوع ولقد تمت الإجابة علي كل الأسئلة التي طرحتها بارتياح تام.

أوافق طوعا علي المشاركة في هذا البحث.

إسمالمشارك

التاريخ.....

توقيع المشارك.....

إسم الشاهد.....التاريخ

توقيع الشاهد.....

إسم

الباحث.....التاريخ

توقيع الباحث.....

- سوف تعطي صورة من هذا النموذج.

APPENDIX 7: ARABIC QUESTIONNAIRE

استبيان: تقييم تأثير اللامركزية على الحصول على الرعاية وجودة الرعاية

شخصية

بيانات

1- الجنس:

أ- أنثى ()

ب- ذكر ()

2- التعليم:

أ- غير متعلم ()

ب- تعليم غير نظامي ()

ت- الابتدائية ()

ث- المتوسط ()

ج- الثانوي ()

ح- جامعي فما فوق ()

3- الحالة الاجتماعية:

أ- أعزب ()

ب- متزوج ()

ت- مطلق ()

ث- أرمل

4- العمر.....

5 - العنوان _____

6 - المجموعه - الإثنية _____

7 - المهنة _____

الوصول إلى خدمات الرعاية الصحية؟ توافر المرافق الصحية:

9- كم عدد أفراد هذه الأسرة؟

10- كم عدد الأطفال الذين يعيشون في هذه الأسرة: (الرجاء كتابة الرقم في المكان المخصص)
أ- تحت 5 سنوات من العمر ()

ب- 5 سنوات وما فوق ()

11- هل لديك مرفق صحي في منطقتك؟

أ- نعم () ب- لا ()

إذا نعم،
12- ما هو نوع المرفق الصحي الذي تحصل فيه على خدمات الرعاية الصحية الخاصة بك؟
أ- نقطة غيار () ب- شفاينة ()

ت- مركز صحي () ث- وحدة الرعاية الصحية الأولية ()

ج- مستشفى مرجعي () ح- مستشفى طرفي ()

و- القطاع الخاص () ف- الذهاب مباشرة إلى الصيدلية ()

ق- آخري () حدد

13- ما هي المسافة التي يبعدها المرفق الصحي من منزلك؟
أ- أقل من 5 كم () ب- 5 كم ()

ج- 5-10 كم () د- أكثر من 10 كم ()

14- هل تتلقى الخدمة الصحية في المرفق الصحي الذي في منطقتك؟

أ- نعم () ب- لا ()

15- هل تحصل على الخدمة الصحية مجاناً؟

أ- نعم () ب- لا ()

إذا
16- ما هي الطريقة التي تدفع بها في المرفق الصحي؟ لا،
أ- رسوم للخدمة () ب- التأمين الصحي ()

17- هل يمكن ان تتحمل دفع هذا المبلغ؟
أ- نعم () ب- لا ()

18- كم كنت تدفع كرسوم مقابلة الطبيب في كل مقابلة؟
أ- أقل من 20 جنيهه () ب- 20 - 50 جنيهه ()
ج- 50 - 100 جنيهه () د- أكثر من 100 جنيهه ()

19- كم كنت تدفع للأدوية في كل مقابلة؟
أ- أقل من 20 ج ب- 20 - 50 ج
ج- 50 - 100 جنيهه () د- أكثر من 100 جنيهه ()

20 - كم كنت تدفع للفحوصات في كل مقابلة؟
أ- أقل من 20 ج ب- 20 - 50 ج
ج- 50 - 100 جنيهه () د- أكثر من 100 جنيهه ()

21 - ماهي تكلفة الحصول علي الخدمات الصحية في السنة؟.....

22 - هل تتمكن من الحصول علي الخدمات الصحية بشكل منتظم؟
أ- نعم () ب- لا ()

إذا (لا) جاوب علي السؤال322, اذا (نعم) اذهب ل 24

23 - ما هي العوامل التي تجعل الحصول عل الخدمة غير منتظم؟(يمكن إختيار أكثر من إجابة)
أ- الخدمات الصحية غير متوفرة () ب- القيود المالية ()

ج-عدم انتظام توافر الأدوية () د- بعد المنشأه من منطقتك ()
ت-عدم انتظام توافر الكوادر الصحية () ث- عدم وجود الفحوصات المخبرية ()

و-العاملين الصحيين غير مؤهلين () ف- عدم وجود وسائل النقل ()

ق- المعاملة السيئة من قبل العاملين في المجال الصحي () ن- أخرى ()

حدد

24- هل المرافق الصحية مفتوحة كلما تحتاج اليها؟
أ- نعم () ب- لا ()

25- إذا لم تكن الخدمات الصحية متوفرة في المرفق صحي القريب منك ماذا تفعل؟
أ- التحويل من قبل الكادر الصحي الي منشأه أخرى () ب- الذهاب لمرفق آخر مباشرة ()
ج- استخدام علاج المنزلي () د- الذهاب إلى معالج تقليدي ()
ت- الحصول على العلاج من الصيدلية ()

26 - هل الخدمات الصحية التي تتحصل عليها مناسبة لاحتياجاتك؟
أ- نعم () ب- لا ()

جودة خدمات الرعاية الصحية:

27- هل يمكن أن تصنف جودة الخدمات الصحية التي تحصل عليها الآن بعد لامركزية الخدمات الصحية؟
أ- متدهوره () ب - تحسنت ()

28- هل العاملين في مجال الصحة متوفرين بانتظام في المرافق الصحية الخاصة بك؟
أ- نعم () ب- لا ()

ذا
29 - ما هوالمتاح من الكوادر الصحية في المرافق الصحية الخاصة بك؟ (يمكن اختيار اكثر من اجابة)
أ- المساعدين الطبيين () ب- الممرضين ()

ج- الطبيب العمومي () د- إختصاصيين ()

ت- الدايات () ث- أخرى () حدد.....

30 - هل الأدوية متوفرة بشكل منتظم في مرفقك الصحي؟
أ- نعم () ب- لا ()

31 - هل تتلقي معلومات صحية(تثقيف صحي) في المرفق الصحي القريب منك؟
أ- نعم () ب- لا ()

32 - هل تثق في الموظفين الصحيين في المرفق الصحي؟
أ- نعم () ب- لا ()

33- هل تنتظر لفترة طويلة لتلقي الخدمات الصحية في المرفق الصحي؟

أ- نعم () ب- لا ()

34 - كم من الوقت تنتظر بالدقائق لتلقي الخدمات الصحية في المرفق الصحي القريب منك؟

.....

35 - هل اختبرت أي تحسن في الحصول على الخدمات الصحية ما بعد اللامركزية؟
أ- نعم () ب- لا ()

36 - هل تكاليف العلاج أصبحت معقولة بعد اللامركزية؟
أ- نعم () ب- لا ()

37 - هل تشعر بأنك مرحب بك في المرفق الصحي بعد اللامركزية؟

أ- نعم () ب- لا ()

38 - هل أنت راض عن نوعية الخدمات الصحية التي تحصل عليها؟

أ- نعم () ب- لا () ج- لا أعرف ()

39 - ما هي نوعية مباني المرافق الصحية الان (بعد اللامركزية)؟

أ- جيدة () ب- سيئة ()

40- ما هو تقييمك لي مؤشرات جودة الخدمة بعد اللامركزية؟

#	المؤشر	تدهورت	تحسن طفيف	تحسنت بشكل ملحوظ
1	توفر الأدوية			
2	توفر المرافق الصحية			
3	مسافة المرفق الصحي من البيت			

			القدرة على تحمل تكاليف رسوم مقابلة الطبيب	4
			نوعية مباني المرافق الصحية	5
			القدرة على تحمل تكاليف الأدوية	6
			القدرة على تحمل تكاليف الفحوصات	7
			توفر الكوادر الصحية	8
			توفر المعلومات ذات الصلة بالصحة	9

APPENDIX 8: ARABIC HEALTH SERVICES USERS INTERVIEW THEMES

موضوعات المقابلة العميقة للمستخدمين

ما هي تجربتك في تلقي الخدمات الصحية، أو كيف تحصل على الخدمة الصحية عندما تكون أنت أو أحد أفراد الأسرة مريضاً؟

كيف تغيرت تجربتك في تلقي الخدمات الصحية بعد عام 2011 (لامركزية الخدمات الصحية)؟

ما هي أهم ثلاثة تغييرات إيجابية حدثت بعد اللامركزية؟

ما هي أهم ثلاثة تغييرات سلبية حدثت بعد اللامركزية؟

هل واجهت أي تغيير في نوعية الخدمات الصحية بعد اللامركزية؟ وكيف؟

ما هي أهم العوامل التي تمنعك من الوصول إلى الخدمات الصحية؟

ما هي اقتراحاتكم لتحسين تنفيذ اللامركزية؟

APPENDIX 9: ARABIC HEALTH CARE PROVIDERS INTERVIEW THEMES

موضوعات المقابلة العميقة لمقدمي الخدمة عن رضاهم الوظيفي

العمر:

الوظيفة:

كم من الزمن وانت تعمل في هذه الوظيفة:

1Q حدثنا عن تجربتك مع تطبيق الأيلولة؟

2Q من خلال تجربتك ماهي التغييرات التي طرأت بشأن بيئة العمل الخاصة بك (البنية التحتية والمستلزمات الطبية والأدوية) بعد الأيلولة ؟

3Q هل تلقيت تدريب حول أيلولة الخدمات الصحية؟

4Q: ما هي تصوراتك للتغيير بخصوص تقديم الخدمات الصحية للمرضى بعد الأيلولة ؟

5Q ما هو التغيير الذى حدث لك من ناحية التنمية المهنية والتدريب بعد الأيلولة ؟

6Q ما هي ثلاثة تغييرات إيجابية حدثت بعد الأيلولة ؟

7Q ما هي ثلاثة تغييرات سلبية حدثت بعد الأيلولة ؟

8Q هل تشعر بالارتياح حول راتبك؟ لماذا؟

9Q هل تشعر بأنك راض عن عملك؟ لماذا؟

10Q ما هو التغيير الذى حدث في السكن الخاص بك بعد الأيلولة ؟

11Q هل أنت أكثر انخراطا في اتخاذ القرارات في المسائل الإدارية بعد الأيلولة ؟

12Q هل ميزانية المستشفى أكثر ملائمة بعد الأيلولة ؟

13Q ما هي اقتراحاتكم لتحسين تنفيذ الأيلولة ؟

APPENDIX 10: ARABIC INTERVIEW THEMES FOR POLICYMAKERS AND HEALTH RELATED ORGANIZATIONS REPRESENTATIVES

مواضيع المقابلة العميقة مع واضعي السياسات وممثلي المنظمات التي لها علاقة بالصحة:

- 1- ماهي تجربتك مع تطبيق الأيلولة؟
- 2- من خلال تجربتك مافي التغييرات التي طرأت علي النظام الصحي بعد الأيلولة (ميزانية الصحة, النظام الدوائي, نظام التحويلات للمرضي, ووجود المنظمات التي تعمل في مجال الصحة)؟
- 3- ماهي ثلاثة تغييرات ايجابية حدثت في النظام الصحي بعد الأيلولة؟
- 4- ماهي ثلاثة تغييرات سلبية حدثت في النظام الصحي بعد الأيلولة؟
- 5- ماهي تصورك للتغييرات التي حدثت في الخدمة الصحية المقدمة للمرضي؟
- 6- ماهي تصوراتك للتغييرات التي حدثت في نظام التدريب والتنمية المهنية بعد الأيلولة؟
- 7- مافي تصوراتك للتغيير الذي حدث في مشاركة المنظمات التي لها علاقة بالصحة في ادارة شئون الصحة بعد الأيلولة؟
- 8- ماهي مقترحاتك لتطوير تطبيق الأيلولة؟

APPENDIX 11: NORWAY (REK) ETHICAL CLEARANCE CERTIFICATE



Region: REK sør-øst	Saksbehandler: Tor Even Svanes	Telefon: 22845521	Vår dato: 01.07.2015	Vår referanse: 2015/937/REK sør-øst C
			Deres dato: 12.05.2015	Deres referanse:

Vår referanse må oppgis ved alle henvendelser

Gunnar Aksel Bjune
Universitetet i Oslo
postboks 1130 Blindern
0317 Oslo

2015/937 Desentralisering av helsetjenestene i Sudan

Vi viser til søknad om forhåndsgodkjenning av ovennevnte forskningsprosjekt. Søknaden ble behandlet av Regional komité for medisinsk og helsefaglig forskningsetikk (REK sør-øst C) i møtet 11.06.2015. Vurderingen er gjort med hjemmel i helseforskningsloven § 10, jf. forskningsetikkloven § 4.

Forskningsansvarlig: University of Oslo
Prosjektleder: Gunnar Aksel Bjune

Prosjektomtale (original):

The research will add knowledge about stakeholders perception about effect of decentralization on health services, specifically utilization of health services and job satisfaction of health workers, because there are variation from country to country regarding the perceived effect of decentralization, so the project will address stakeholders(users of health service, health providers and hospital administrative staff) perceptions about the effect of decentralization implementation on utilization of health services which will be measured by quantitative method(household survey) and qualitative (in-depth interview) with users of health services, where as the other indicator which is job satisfaction, the project will assess the experienced change in job satisfaction by using qualitative methodology through in-depth interview with health providers and administrative staff of hospitals. The project will analyze routinely collected hospital data about attendance rate in hospitals.

The Regional Committee for Medical & Health Research Ethics, Section C, South East Norway, reviewed the Research Project “Decentralization of health services. A study of the process of decentralization implementation and stakeholders’ perceptions about its effect on health services in Khartoum locality, Sudan” (Norwegian title: *Desentralisering av helsetjenestene I Sudan*) at its Committee Review Meeting on the 11th of June 2015.

The application was assessed accordance with the Norwegian Research Ethics Act (2006) and Act on Medical and Health Research (2009).

Decision

The Regional Committee for Medical & Health Research Ethics, Section C, South East Norway, found the Research Project to be outside the remit of the Act on Medical and Health Research (2009) and therefore can be implemented without its approval.

Klageadgang

Du kan klage på komiteens vedtak, jf. forvaltningsloven § 28 flg. Klagen sendes til REK sør-øst. Klagefristen er tre uker fra du mottar dette brevet. Dersom vedtaket opprettholdes av REK sør-øst, sendes klagen videre til Den nasjonale forskningsetiske komité for medisin og helsefag for endelig vurdering.

Besøksadresse:
Gullhaugveien 1-3, 0484 Oslo

Telefon: 22845511
E-post: post@helseforskning.etikkom.no
Web: <http://helseforskning.etikkom.no/>

All post og e-post som inngår i saksbehandlingen, bes adressert til REK sør-øst og ikke til enkelte personer

Kindly address all mail and e-mails to the Regional Ethics Committee, REK sør-øst, not to individual staff

Med vennlig hilsen

Britt-Ingjerd Nesheim
professor dr. med.
leder REK sør-øst C

Tor Even Svanes
seniorrådgiver

Kopi til: g.a.bjune@medisin.uio.no

APPENDIX 12: NORWAY (NSD) ETHICAL CLEARANCE CERTIFICATE

Norsk samfunnsvitenskapelig datatjeneste AS
NORWEGIAN SOCIAL SCIENCE DATA SERVICES



Harald Hårfagres gate 29
N 5007 Bergen
Norway
Tel: +47-55 58 21 17
Fax: +47-55 58 96 50
nsd@nsd.uib.no
www.nsd.uib.no
Org.nr: 985 321 884

Gunnar Bjune
Institutt for helse og samfunn Universitetet i Oslo
Postboks 1130 Blindern
0318 OSLO

Vår dato: 25.08.2015

Vår ref: 44106 / 3 / LB

Deres dato:

Deres ref:

TILBAKEMELDING PÅ MELDING OM BEHANDLING AV PERSONOPPLYSNINGER

Vi viser til melding om behandling av personopplysninger, mottatt 28.07.2015. Meldingen gjelder prosjektet:

44106	<i>Decentralization of health services. A study of the process of decentralization implementation and stakeholders perceptions about its effect on health services in Khartoum locality, Sudan</i>
<i>Behandlingsansvarlig</i>	<i>Universitetet i Oslo, ved institusjonens øverste leder</i>
<i>Daglig ansvarlig</i>	<i>Gunnar Bjune</i>
<i>Student</i>	<i>Bandar Noory</i>

Personvernombudet har vurdert prosjektet, og finner at behandlingen av personopplysninger vil være regulert av § 7-27 i personopplysningsforskriften. Personvernombudet tilrår at prosjektet gjennomføres.

Personvernombudets tilråding forutsetter at prosjektet gjennomføres i tråd med opplysningene gitt i meldeskjemaet, korrespondanse med ombudet, ombudets kommentarer samt personopplysningsloven og helseregisterloven med forskrifter. Behandlingen av personopplysninger kan settes i gang.

Det gjøres oppmerksom på at det skal gis ny melding dersom behandlingen endres i forhold til de opplysninger som ligger til grunn for personvernombudets vurdering. Endringsmeldinger gis via et eget skjema, <http://www.nsd.uib.no/personvern/meldeplikt/skjema.html>. Det skal også gis melding etter tre år dersom prosjektet fortsatt pågår. Meldinger skal skje skriftlig til ombudet.

Personvernombudet har lagt ut opplysninger om prosjektet i en offentlig database, <http://pvo.nsd.no/prosjekt>.

Personvernombudet vil ved prosjektets avslutning, 01.12.2015, rette en henvendelse angående status for behandlingen av personopplysninger.

Vennlig hilsen

Katrine Utaaker Segadal

Lene Christine M. Brandt

Dokumentet er elektronisk produsert og godkjent ved NSDs rutiner for elektronisk godkjenning.

Avdelingskontorer / District Offices

OSLO NSD Universitetet i Oslo, Postboks 1055 Blindern, 0316 Oslo. Tel: +47-22 85 52 11. nsd@uio.no
TROMSØ NSD Norges teknisk naturvitenskapelige universitet, 7491 Trondheim. Tel: +47 73 59 19 07. kyrre.svarva@svt.ntnu.no
TROMSØ NSD SVI, Universitetet i Tromsø, 9037 Tromsø. Tel: +47 77 61 43 36. nsdmaa@svi.uit.no

Kontaktperson: Lene Christine M. Brandt tlf: 55 58 89 26
Vedlegg: Prosjektvurdering
Kopi: Bandar Noory bandar.noory@studmed.uio.no



Prosjektvurdering - Kommentar

Prosjektnr: 44106

The sample will receive written and oral information about the project, and give their consent to participate. The letter of information and consent form are somewhat incomplete, and we ask that the following is added:

- That Universitetet i Oslo is the data controller of the project.
- That all data will be made anonymous by the end of the project (by 01.12.2015).
- The supervisor's contact information.
- Further, the sentence "Everything that you talk about with the research staff is completely confidential, meaning that you will not be identifiable", should be rewritten so that it is clear that "(...) you will not be identifiable in any publications from the project".
- Lastly, we suggest that only the participant and the researcher sign the consent form.

We ask that the revised letter of information is sent to personvernombudet@nsd.uib.no before contact with the sample is established.

There will be registered sensitive information relating to ethnic origin or political/philosophical/religious beliefs and health, cf. Personal Data Act § 2, no. 8 a) and c).

The Data Protection Official presupposes that the researcher follows internal routines of Universitetet i Oslo regarding data security.

Estimated end date of the project is 01.12.2015. According to the notification form all collected data will be made anonymous by this date. Making the data anonymous entails processing it in such a way that no individuals can be recognised. This is done by:

- deleting all direct personal data (such as names/lists of reference numbers)
- deleting/rewriting indirectly identifiable data (i.e. an identifying combination of background variables, such as residence/work place, age and gender)

APPENDIX 13: SUDAN ETHICAL CLEARANCE CERTIFICATE

Republic of Sudan
Federal Ministry of Health

NATIONAL HEALTH RESEARCH COUNCIL

NATIONAL RESEARCH ETHICS REVIEW COMMITTEE

Date : 13/9/2015

Ethical Clearance Certificate

This is to certify that the proposal entitled (A Study of the process of devolution implementation and health service consumers' and providers' perceptions about its effect on health services in Khartoum Locality, Sudan, 2015), introduced by Dr. Bandar Salah Noory Mohamed, from University of Oslo, -Norway, has been approved by the National Health Research Ethics Committee, Federal Ministry of Health to be carried out in the Sudan.

NB

The principal investigator is requested to submit the final report to the Research Directorate-Federal Ministry of Health.

13/9/2015
Dr. Iman Abdalla Mustafa
Reporter of the
National Research Ethics Review Committee

