Factors Influencing Quality of Family Planning Service in Sudan.

Literature Review

AHMED OMAR
KIT (Royal Tropical Institute) Vrije Universiteit Amsterdam (VU)

Factors Influencing Quality of Family Planning Service in Sudan.

Literature Review

AHMED MOHAMEDELAMIN ADAM OMAR

Master of Science in Public Health

KIT (Royal Tropical Institute)
Vrije Universiteit Amsterdam (VU)

FACTORS INFLUENCING QUALITY OF FAMILY PLANNING SERVICE IN SUDAN

A thesis submitted in partial fulfilment of the requirement for the degree of Master of Science in Public Health

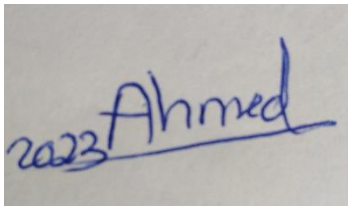
by

AHMED MOHAMEDELAMIN ADAM OMAR
Sudan

Declaration:

Where other people's work has been used (from either a printed or virtual source or any other source), this has been carefully acknowledged and referenced in accordance with academic requirements.

The thesis Factors Influencing Quality of Family Planning Service in Sudan is my work.

Signature 

12 September 2022 – 1 September 2023
KIT (Royal Tropical Institute)/Vrije Universiteit Amsterdam
Amsterdam, The Netherlands
September 2023
Organized by:
KIT (Royal Tropical Institute)
Amsterdam, The Netherlands
In cooperation with:
Vrije Universiteit Amsterdam (VU)
Amsterdam, The Netherlands

Contents

DEFINITION OF TERMS

Family Planning:

"Enables individuals and couples to anticipate and attain their desired number of children and the spacing and timing of their births. It is achieved through the use of contraceptive methods and the treatment of involuntary infertility"(1)

Contraceptives: -

"Any device or act whose purpose is to prevent a woman from becoming pregnant can be considered as a contraceptive."(2)

Modern methods of contraception

"Include: oral contraceptive pills, implants, injectables, intrauterine device (IDU), male condoms, lactational amenorrhea method (LAM), emergency contraception pills"(3)

Contraceptive Prevalence Ratio: -

"The percentage of women aged 15-49 years, married or in-union, who are currently using, or whose sexual partner is using, at least one method of contraception, regardless of the method used."(4)

Unmet need for family planning: -

"Defined as those who want to delay or stop childbearing but are not using contraception"(5).

Quality of Care: -

The term "quality of care" in the context of family planning refers to a broad range of issues, including technical proficiency, method selection, knowledge of clients, client relationships, and the selection of the proper constellation of services. Therefore, high-quality family planning services enable both individuals and couples to safely and effectively meet their reproductive health needs" (6).

LIST OF ABBREVIATIONS

ICPD	International Conference on Population and Development
IEC	Information, Education and Communication
IUD	Intrauterine Device
FMoH	Federal Ministry of Health
SMoH	State Ministry of Health
NGOs	Non-Governmental Organizations
NHIF	National Health Insurance Fund
NMSF	National Medical Supply Fund
NRHSP	National Reproductive Health Strategic Plan
UHC	Universal Health Coverage
UNFPA	United Nations Population Fund
UNICEF	United Nations Children Fund
WHO	World Health Organization
SDPs	Service Delivery Points
PHC	Primary Health Care
MSF	Médecins Sans Frontières
MICS	Sudan Multiple Indicator Cluster Survey
CPR	Contraceptive Prevalence Rate
GDP	Gross domestic product
HIS	Health Information system
DHIS	District Health information system
CHWs	Community Health Workers
SRH	Sexual and reproductive Health
FP	Family Planning

ABSTRACT

Background: The provision of quality family planning services can be impacted by various factors, including lack of funding, conflict, political instability, and economic instability.

Objective: To analyze government Family Planning policies, guidelines and strategies existing gaps influencing the quality of family planning in Sudan, factors that influence patient satisfaction and provide recommendations and best practices to the Sudan Federal Ministry of Health.

Methods: A literature review using Judith Bruce Fundamental Elements of the Quality of Care. Only English and Arabic literature was included in the study.

Results and Conclusion: The health sector in Sudan is suffering from a lack of funding, particularly for sexual and reproductive services such as family planning. These services depend entirely on external donations, and there is also a problem with inadequate distribution of resources and stockouts of family planning commodities.

Recommendation: The government should prioritize allocating a budget for sexual and Reproductive Health commodity procurement and explore sustainable funding methods. Strengthening family planning services can be achieved by training healthcare professionals, incentivizing health workers, and expanding community health worker programs.

Keywords: Quality of care, Contraceptive, Family planning, client's satisfaction, , resource allocation, follow-up, Sudan, Lower Middle-income countries, East Africa, Sub-Saharan Africa

WORD COUNT: 11853

Acknowledgement: -

In the name of Allah, the most gracious and the most merciful.

I want to express my gratitude to my thesis advisor and supporter, who helped me throughout the process of writing my thesis. I'm also thankful to my friends and colleagues for creating a helpful learning environment during the course.

I send my heartfelt thanks and best wishes to my family and friends in Sudan, who encouraged and stood by me throughout this year.

I would like to Thanks to my Thesis Supervisor and Academic Supervisor, as they made this work possible. Their guidance and advice helped me through all the stages of writing my thesis.

I appreciate my family's unwavering support throughout this year. I am thankful for the support I received from my friends, both in Sudan and the Netherlands.

I want to acknowledge the KIT team and coordinators for their hard work in helping me gain knowledge.

I want to mention Nuffic for sponsoring my scholarship through the Orange Knowledge Program (OKP). This opportunity allowed me to enhance my knowledge and skills.

This thesis is dedicated to all families, like mine, living and facing challenges in conflict zones in Sudan and around the world.

1. CHAPTER 1: BACKGROUND INFORMATION

1.1 Geography:

The Republic of Sudan is a country in the northeast of Africa with a total area of 1.9 million square kilometers. Egypt, Libya, Chad, the Central African Republic, South Sudan, Ethiopia, Eretria, and the Red Sea are its northern, western, southern, and southern-western neighbours, respectively(7) Figure 1. Sudan has 18 administrative deviations called states, each state divided into small administrations called localities According to the Central Bureau of Statistics (CBS) 2022 Survey there are 198 localities in total (8).

Sudan is the third-largest country in Africa, with a population of 47.5 million, Khartoum is the capital with a population of 8 million (9). The estimated total population in July 2023 is 48,109,006 Figure 2 (10).

Figure 1: Sudan Map (11)

1.2 Demographic characteristics

Sudan is home to a diverse range of cultures, ethnic groups, and languages. This variety represents over 518 ethnic communities that are represented by various broad cultural backgrounds identities: In the middle and north, 36% are Arabs, 20% are Africans, 9% are Fur, 6% are Bija, 21% are Nubians, and 5% are Hamatic (12). Language barriers, discrimination, and uneven government provision of health and education among ethnic groups continue to be

factors. Closely connected social networks are another factor. Sudan's population in 2021 showed that the percentage of females is 22.84 and four males is 22.81 (13) based on a 2017 study The population is growing by 2.86%, with 30.8% of people living in urban areas and 69.2% in rural areas(8). Women who were married or in a union before the age of eighteen represent 34.2% of those aged 20 to 24. As of 2013, the adolescent birth rate increased from 64.9 per 1,000 women aged 15 to 19 to 86.8 per 1,000. In 2014, modern family planning methods fulfilled the need for family planning for 30.1% of women(14). Religion is an important part of the Sudanese way of living. 91% is Muslim, 5.4% is Christian, 2.8% adhere to Indigenous religions, and the rest adheres to other religions(15).

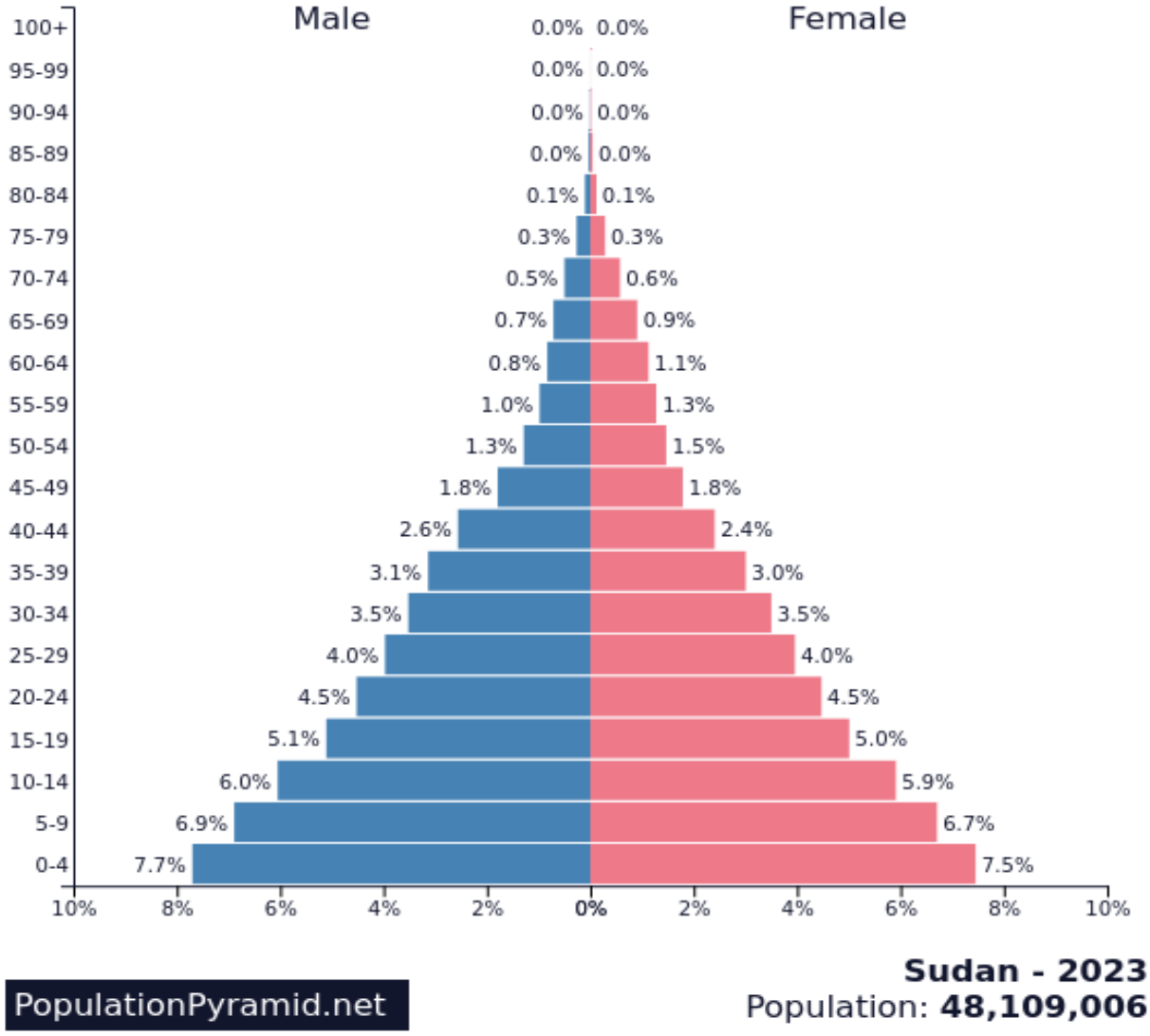


Figure 2: Population of Sudan - age and sex(10)

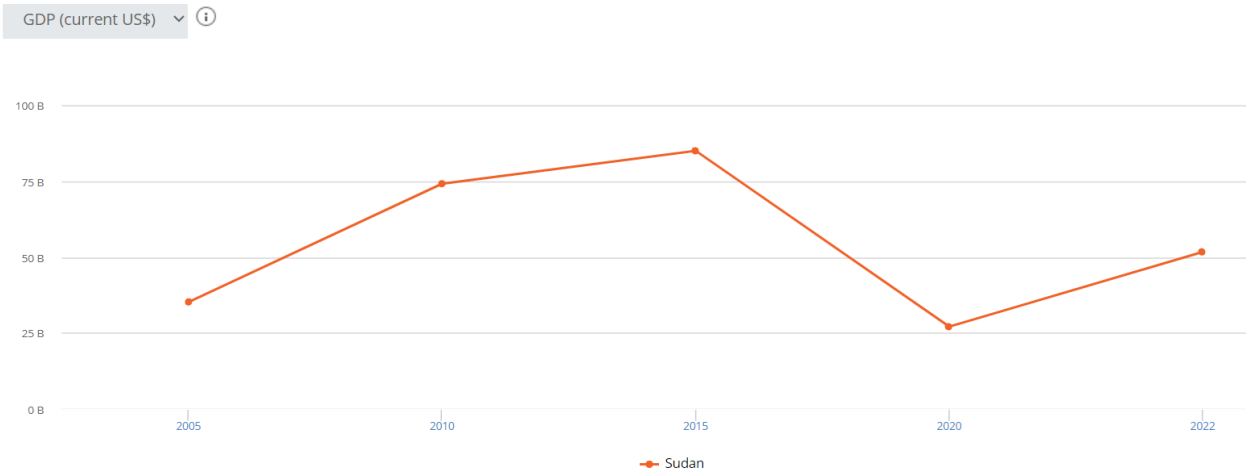
1.3 Fertility

The Total Fertility Rate (TFR) has been reported as 5.2 births per woman. There exists a significant disparity in fertility rates between rural and urban areas, with rural regions showing a higher average of 5.6 births per woman, in contrast to urban areas where the average stands at 4.4 births per woman. The disparity in fertility rates between urban and rural regions is most notable among women aged 20-24, with urban areas seeing a rate of 167 births per 1,000 women compared to 225 births per 1,000 women in rural areas. The aggregate age distribution of fertility, as shown by the Age-Specific Fertility Rates (ASFRs), indicates the initiation of childbirth occurs at a young age. The fertility rate among teenagers is quite modest, but it gradually grows to reach its highest point of 259 births per 1,000 women in the age group of 25-29(16).

1.4 Political and Economics: -

Following Sudan's declaration of independence in 1956, the country faced significant challenges associated with internal conflict that had a profound impact on both political stability and economic development. In 1993, Sudan was designated a state sponsor of terrorism by the United States, leading to the implementation of various sanctions and trade boycotts. Additionally, the United Nations Security Council imposed sanctions on Sudan in 2004 due to human rights violations that occurred in the Darfur region of Western Sudan (17)(18). Following two civil wars and ongoing conflicts in certain regions of Africa, South Sudan successfully gained independence from Sudan in 2011. This separation had a significant impact on Sudan's economy, with a 75% decrease in oil earnings, which previously made up almost half of the government's revenues and 95% of its exports(19). Starting in December 2018, a series of mass protests resulted in the removal of then-President El-Bashir from power in April 2019. As a result, a Transitional Government was established in September 2019. However, in the first week of January 2022, the Prime Minister resigned, causing an ongoing political crisis. This has led to protests that have affected the stability, resilience, and effectiveness of various national institutions, including the healthcare system(20). In the second week of April 2023, fighting broke out in Khartoum between the Sudanese Armed Forces and the Rapid Support Forces. As a result, approximately 3.9 million people were displaced both within and outside the country. More than three million individuals have been internally displaced(21).

The Sudanese economy has experienced a number of difficulties, resulting in higher inflation rates and a drop in the value of the national currency. The country's gross domestic product (GDP) per capita reduced to about 60 million US dollars in 2021 in comparison with 2015 was 110 million US dollars and 80 million US dollars in 2010 as shown below, This can explain by political instability leading to the scarcity of hard currencies. As a result, the country is now categorized as a low-income country (23).



Source: World Development Indicators

Source: World Bank development indicator -Sudan(22)

1.5 Health System

1.5.1 Organizational Structure of Sudan Health Service

Health services in Sudan are provided by both the public and private sectors, including nonprofit and for-profit organizations. In the public sector, various entities provide health services, including federal and state ministries of health, the army, police, higher education, and social insurance schemes. The public sector has a three-tiered organization and management structure for health services. This includes the Federal Ministry of Health (FMoH), State Ministries of Health (SMoH) in each state, and local health authorities in each locality (23).

Sudan Health services are provided through a three-tiered structure as in Figure 3 below, also known as Services Delivery points. SDPs are categorised into the following: 1. Primary Level of Care includes: - Family Health Unit (FHU) and Family Health Centre (FHC)2. Secondary Level of Care (Locality Hospital) 3. Tertiary Level of Care (State Hospital) (Specialized Hospital)

The private sector is expanding; however, it is mainly located in major cities and concentrates primarily on curative care. The distribution of hospitals and health centres reveals that the 'for-profit sector' consists of 17 hospitals, while the 'not-for-profit sector' has 32 hospitals and 319 health centres. Primary care is provided by family health centres and divisions in both urban and rural areas. The government runs 3,726 family health centres/units, 141 locality hospitals, and 55 hospitals(23).

The Federal Ministry of Health (FMoH) plays an important role in the development of national health policies, strategies, monitoring and evaluation programs, as well as training and external interactions. The state level is concerned with state plans and strategies, and it is based on federal

laws for plan financing and implementation. The key issues of the municipalities are implementation and service supply. Inadequate coordination leads to duplication of activity among various players(24).

Sudan is predominately susceptible to natural and man-made disasters, Drought, floods, internal conflicts, and outbreaks (25). The healthcare system is fragile in both public and private sectors, and the reason behind that is political, socioeconomic, poverty and high inflation (26) The health system suffers from disparities and inequities between urban and rural areas, as well as among different states(27) and health sector continues to face significant challenges, including a high burden of communicable and non-communicable diseases, insufficient medical staff, poor logistics management in the supply of health commodities, particularly between the State level and locality level; inadequate medicines management and control systems at the health facility level, insufficient distribution of health infrastructure, equipment, and transport and health information system challenges. (28). The high prevalence of communicable and non-communicable supported by the study showed that cardiovascular diseases accounted for 28% of total deaths, followed by cancers (6%), chronic respiratory diseases (3%), and diabetes (2%). Overall, NCDs account for 52% of all deaths. The risk of premature death between the ages of 30 and 70 was reported to be 26%, with a gender difference between males (28%) and females (24%)(29) communicable diseases such as malaria, tuberculosis, and schistosomiasis(25).

According to the reports in 2019 for Sudan, only 43% of health facilities have access to Essential medications, and only 33% of those can offer all the essential components of primary care. Services are even scarce in conflict zones. Only 51% of pregnant women between 2018 and 2019 received the recommended four antenatal care visits (24).

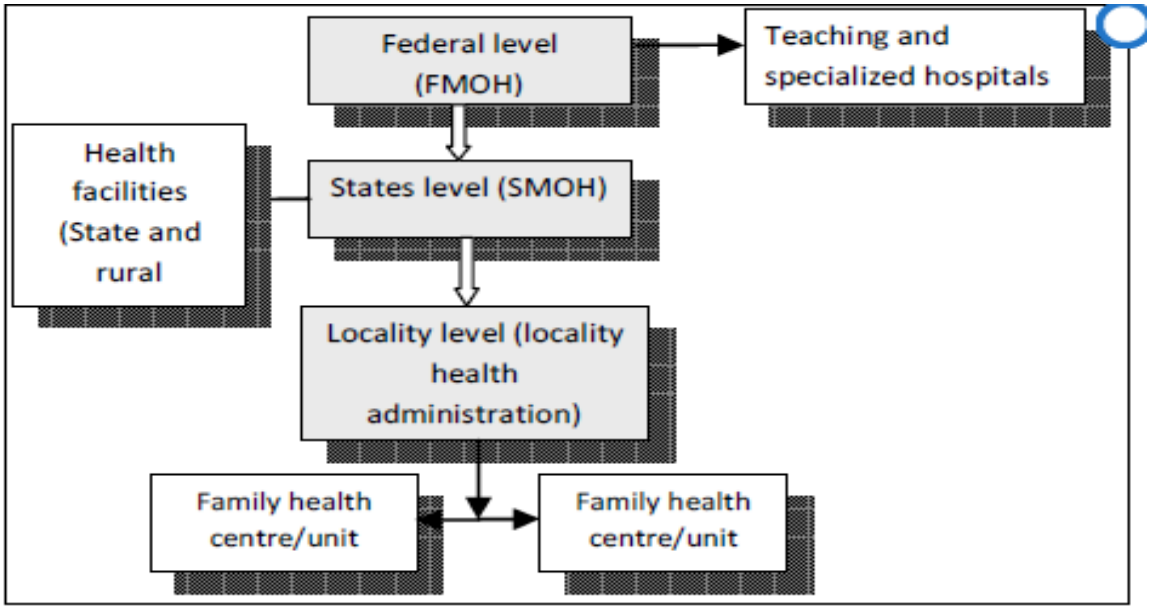


Figure 3: Organization of the Sudan health system(23)

1.5.2 Health Insurance System and Financing:

The National Health Insurance Fund is a public health insurance scheme that aims to provide all Sudanese citizens with universal health coverage. The scheme is supported by government subsidies, employer contributions, and individual premiums, on the other hand, is a state-level health insurance program designed to provide health coverage to residents of specific states(23) Sudan National Health Insurance Fund (NHIF) Established by the act in 1994 and amended in 2001 aims to improve both individual and financial protection (30). Public health insurance provided by the National Health Insurance Fund NHIF is one of the main sources of health financing established in Sudan to achieve universal health coverage UHC(31). However, in terms of pooling, there are challenges in multiple fragmented pools, multiple purchase bodies, and low coverage for the formal and informal sectors (32)(23).

Family planning services are currently not included in the National Health Insurance Fund (NHIF) scheme in Sudan. However, in the latest National Reproductive Health report, it has been proposed that family planning services should be adopted within the National Health Insurance Scheme (33)(34).

Sudan is still far from achieving universal coverage even though two insurance types are available there: Public Health Insurance offered by the national health insurance fund Sudan (NHIF) and Private Health Insurance(35). Around 32.7% of the population lives in cities, 55.3% in rural areas, 8% are nomads, and the remaining percentage are individuals who have been displaced by natural disasters and civil conflicts. Despite the high prevalence of communicable and non-communicable diseases in Sudan(29), there is inadequate access to the PHC minimum package, as well as poor governance and financing structures in the health system, which leads to worsening patient outcomes, increased household expenses, and increased out-of-pocket health expenditure(36)

In the year 2018, Sudan allocated a total of USD$ 2.5 billion towards healthcare expenses, which translates to a per capita health expenditure of USD$ 58. This amount accounted for approximately 4.7% of the country's Gross Domestic Product (GDP). The allocation of funds by the government towards healthcare accounts for 9.8% of the total expenditure. In 2018, the allocation of current health expenditure was primarily composed of domestic private health spending, accounting for 69.3% of the total. On the other hand, external funding made up a smaller proportion, representing 6.6% of the overall expenditure. Despite experiencing a substantial rise in health insurance coverage by 67%, the proportion of out-of-pocket payments (OOP) to total health expenditure remained elevated at 69% in the year 2018. Based on the findings of the Household Health Utilization and Expenditure Survey conducted in 2012, it was observed that out-of-pocket (OOP) payment for healthcare services resulted in a significant proportion of households, specifically 7.8%, experiencing catastrophic expenditures on health. Additionally, a substantial 47% of households reported a negative influence on their household income as a consequence of healthcare expenses. (33) Figure 4 below shows the trend of current health expenditure (% of GDP) in Sudan.

The primary source of finance is the public in terms of the premium of low-income families paid by FMoH and AL zakat1 Fund premium of civil servants. The contribution of the voluntary, informal scheme is still weak, while the private sector contributes only 1%. Despite all those interventions to improve financial access to medicines, out-of-pocket expenditure on medicines is still high.

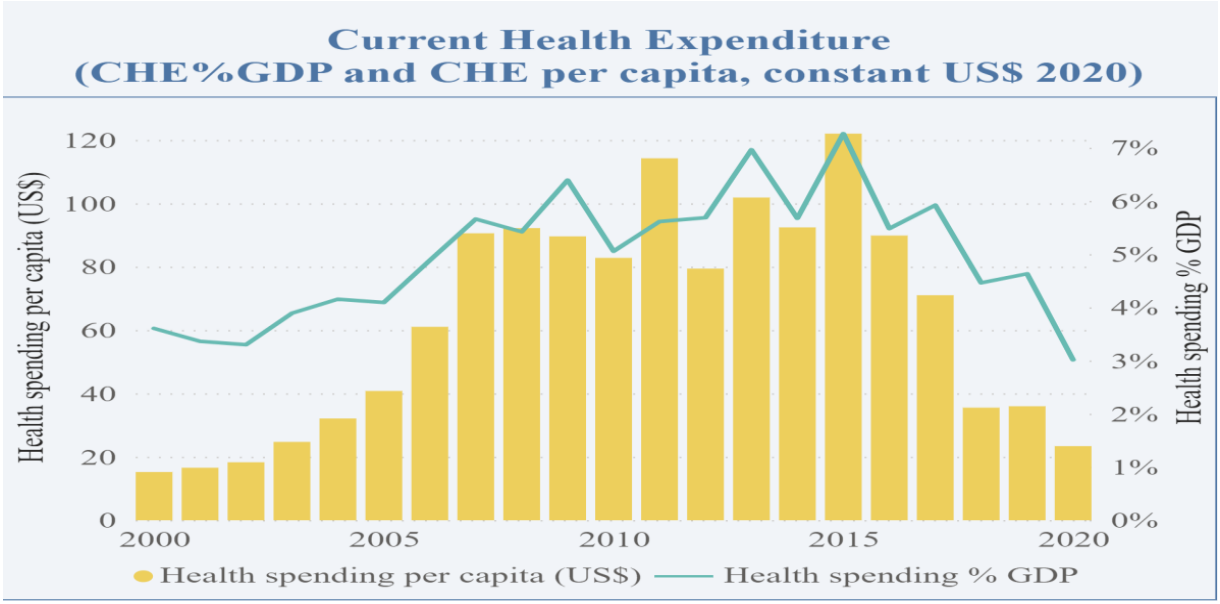


Figure 4 Trend of current health expenditure (% of GDP) - Sudan(37)

1.6 General family planning situation: -

Family planning services play a crucial role in achieving the sustainable development goal. Improvement of the health system, ensuring the availability of sexual reproductive (SRH) commodities, and increasing domestic budget allocation are all essential elements for achieving sustainable development goals, particularly regarding SRH services. According to the most recent Sudan Multiple Indicator Cluster Survey MICS data (2014), the contraceptive prevalence rate is 12.2%, and the unmet need is 26.6%.(16).

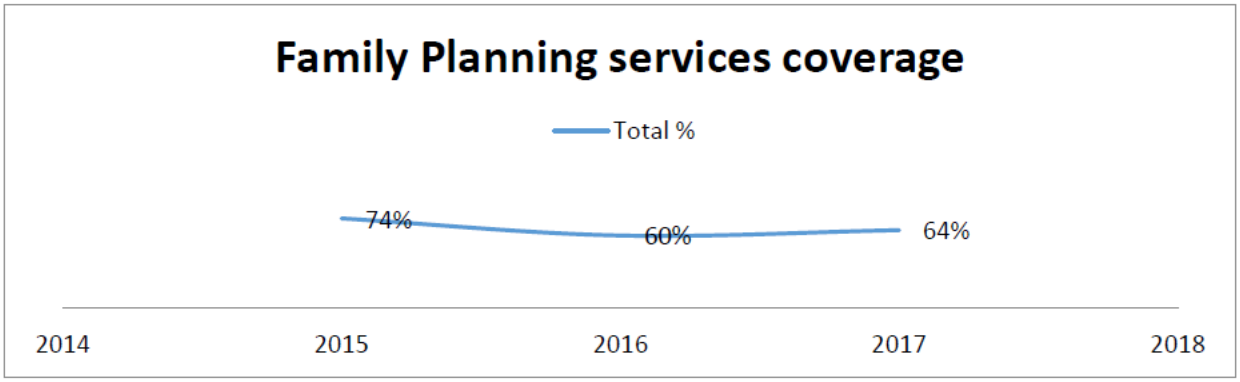
In Sudan, health visitors are essential for providing primary maternal health care services within the primary health care centers. These visitors have a significant role in regular weekly visits to the health centers, where they provide reproductive health services include family planning and supervise the work of the village midwife. In rural areas, primary healthcare services are delivered by a variety of healthcare providers, including medical assistants, community health workers, community midwives, and community volunteers (33).

[1] AL zakat Fund: Islamic charity fund pays contributions on behalf of the poor and martyrs' Families.

Based on the 2017 Sudan Facility-Based Assessment for Maternal Health Commodities and Services, it appears that there has been progress in the provision of family planning services by Service Delivery Points (SDPs) from 2016 to 2017. It's encouraging to note that approximately 63.3% of SDPs now provide family planning services, which is a 4% increase from the previous year. This advancement is a positive step towards improving maternal health in Sudan (figure 5) (38).

The Federal Ministry of Health (FMOH) has been making efforts to enhance the quality of Sexually and reproductive Health services, including family planning services. Despite progress made toward improving family planning indicators, there is still more work to be done to achieve SRH goals related the Sustainable Development Goals (SDGs) targets(27).
Family Planning services included at Maternal and Child Health Services provide them at all Health care levels Service Delivery Points (SDPs). There are different SDPs to choose from, depending on client's contraceptive method needs. Family Planning services are available at Primary Level of Care (Family Health Unit), Primary Level of Care (Family Health Centre), Secondary Level of Care (Locality Hospital), Tertiary Level of Care (State Hospital), and Tertiary Level of Care (Specialized Hospital) illustrated in Figure 6.

The aim of the Sudan Family Planning service is to promote birth spacing methods rather than birth control, as stated in the National RH Policy. Therefore, the service does not offer surgical procedures like male vasectomy and female sterilization. However, modern contraceptive methods are available in Sudan, including long-acting reversible options like implants and IUDs, as well as short-term methods like oral pills, condoms, and injectables. These methods provide individuals with a range of options to choose from(27).



(Figure 5) Percentage Distribution of the surveyed SDPs Providing FP services in 2015, 2016, and 2017. (27)

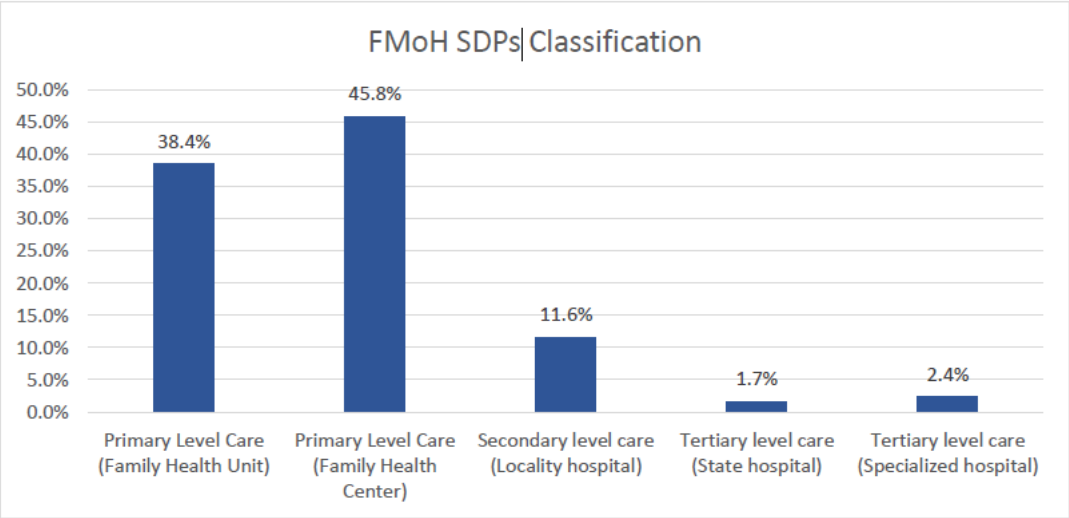


Figure 6-FMoH Classification of Service Delivery Points (Public), MCH Services and Commodities availability survey, 2020, Sudan(27)

2 CHAPTER 2 PROBLEM STATEMENT, JUSTIFICATION, OBJECTIVES, AND METHODOLOGY:

2.1 PROBLEM STATEMENT AND JUSTIFICATION:

Globally, seventy-four million women who reside in low- and middle-income countries become pregnant unintentionally. This results in 25 million unsafe abortions and 47,000 maternal mortalities annually (39). Adolescent and young women aged 15–19 have the highest unintended pregnancy rate globally, and unintended pregnancy rates are the highest in sub-Saharan Africa and South Asia in low- and middle-income countries (40). According to the WHO definition, unintended pregnancy is either unwanted, such as when there are no children or no more children are desired or occurs earlier than desired (mistimed). The concept of unintended pregnancy helps in understanding the unmet need for contraception and family planning. The majority of unintended pregnancies result from not using contraception or using it inconsistently or incorrectly (41).

In Sudan, the maternal mortality ratio is 216 per 100,000 people. In 2021, only 13.4% of women all over the country gave birth in healthcare facilities, and 40% of home births were attended by Skilled birth attendants. These statistics demonstrate that access to reproductive health services is still poor and unequal for many people; for example, a lack of referral services and limited accessibility to life-saving services are responsible for nearly 70% of maternal deaths (33). Based on the most recent data from the Multiple Indicator Cluster Surveys (MICS) in 2014, the contraceptive prevalence rate (CPR) has increased from 9% to 12.2%, with an unmet need of 26.6%, which is among the lowest indicators observed in the African region(16) (42), MICS 2014 also highlighted CPR contraceptive prevalence ranges difference between the capital of Sudan and other major cities in Sudan, for example the CRP 2.9% in Central Darfur and 26.5 % in Khartoum State(16).

There are still significant regional differences in contraceptive use, with more than half of the women who still need contraception living in sub-Saharan Africa and South Asia (43). There are still considerable regional differences in contraceptive use. More than half of the world's unmet need for contraceptives for women is in South Asia and sub-Saharan Africa (44). A study carried out in 36 low- and middle-income countries showed that more than 65.0% of women with an unintended pregnancy either do not use contraceptive methods or use traditional methods (45).

In Sudan, the unequal distribution of resources between rural and urban areas has been the main challenge. Despite this, the Sudanese government works hard to provide fair access to health care for everyone in the country. As a result, the distribution of health resources has been wildly dispersed, reflecting large regional differences in the delivery of quality healthcare services. (46). Health workers providing FP services include Medical Doctors, specialists at all levels of health care, midwives, and nurses at the primary level. Long-acting methods like implants and permeant methods are only provided by trained Medical Doctors and specialists (27).

Despite the Sudanese government's attempts to improve family planning services, issues such as limited access, insufficient knowledge, and low socioeconomic status can lead to higher rates of unintended pregnancies. According to a study, the most common reasons why women of childbearing age do not use contraception are fear of family planning side effects and a lack of Family planning information (47).

Another cross-sectional community-based study conducted in Sudan in 2013 about the use of family planning methods in Kassala, Eastern Sudan, showed that the most common reasons given by respondents for continuing to use or not using family planning are: Husband disapproval (47.5%), religious belief (28.2%), fear of side effects (6.14%), non-availability of family planning (2.7%), and illness (1.2%) (48).
The study aims to provide a deeper understanding of the factors that influence the quality of family planning services, including technical proficiency, method selection, knowledge of clients, and client relationships. Despite evidence from previous research on family planning in Sudan suggesting that women's education and culture are reasons behind the low contraceptive rate(49)(50)(47), Other factors like patient satisfaction, Government and family planning service policies, and unequal distribution of healthcare resources(46), play an important role in factors that influence the quality of family planning services in Sudan. Therefore, it is important to research factors that influence the quality of family planning services in Sudan, with the objective of helping the country develop strategies and policies that will improve the quality of care provided.

2.2 Overall Objective:

This study aims to identify factors that affect the quality of family planning services in Sudan and provide a recommendation to policy maker and Federal Ministry of Health (FMoH) in Sudan.

2.3 Specific Objective

1. To analyze Government Family Planning policies, guidelines and strategy existing gaps influencing the quality of family planning in Sudan.
2. To explore the factors that influence patient satisfaction on the quality improvement of health services in Sudan.
3. To provide recommendations and best practices to the Sudan Federal Ministry of Health, policymakers and stakeholders to enhance health care provision in Sudan.

2.4 Methodology:

2.4.1 Study Design

A literature review was conducted including both peer-reviewed and grey literature and.
Reports have been published by publications by the Government like Federal Ministry of Health (FMoH) Reports, Sudanese National Health Insurance Reports (NHIF), Conference recommendations, FMoH rapid assessment, concept notes, and News press. NGOs like the Sudanese Family Planning Association SFPA, and other UN organizations like the United Nations Population Fund (UNFPA), UN Assessments Reports, and international organizations like MSF. Also, Unpublished reports from FMoH, and SFPA will be used. Search Engines will be used (PubMed, VU online library, Google Scholar) library Databases like (Public Health Institute -PHI). described in Annex below. The study will focus on resources from 2011 to the present, but the search did not exclude possible literature from before 2011 for areas that lacked recent data. Information was gathered from English and Arabic literature.

keywords used: Quality of care, Policies, Contraceptive, Family planning, client's satisfaction, technical competence, resource allocation, follow-up, Sudan, Lower Middle-income countries, Middle East, East Africa, Sub-Saharan Africa.

2.4.2 Inclusion and exclusion criteria:

1. literature in the English language, literature in The Arabic language.
2. literature from other countries with similar characteristics like Sudan.
3. literature review articles from the last ten years (2011 to 2023) Except Bruce-Jain's framework (1990).

2.4.3 Conceptual Framework:

To analyze factors contributing to quality of family planning services in Sudan, an extensive literature search for a conceptual framework was carried out. There were found to be two suitable models for the subject. Donabedian model (51)and Bruce-Jain framework (52).

Judith Bruce Framework defined quality of care as the "way individuals are treated by the system providing services"(53).
Judith Bruce's model provides a framework for assessing the quality of family planning services. The quality of care can be seen in three framework components: the structure of the program, the service-giving process, and the outcome of care.

The framework Program effort is composed of three components it includes: - "1) program structure, 2) political/ policy support and 3) resource allocation".

The framework Service giving/received process is composed of six components: - "1) choice of methods; 2) information given to clients; 3) technical competence; 4) interpersonal relations; 5) follow-up and continuity mechanisms; and 6) the appropriate "constellation" of services".
The framework impact consists of "client knowledge, client behaviour, client satisfaction and client acceptance /continuum."

The framework helps organize interventions for effective results. Figure 7 below shows the framework for family planning services. The Judith Bruce framework improves family planning care quality by evaluating service and identifying key factors in contraceptive care. It ensures high standard care.

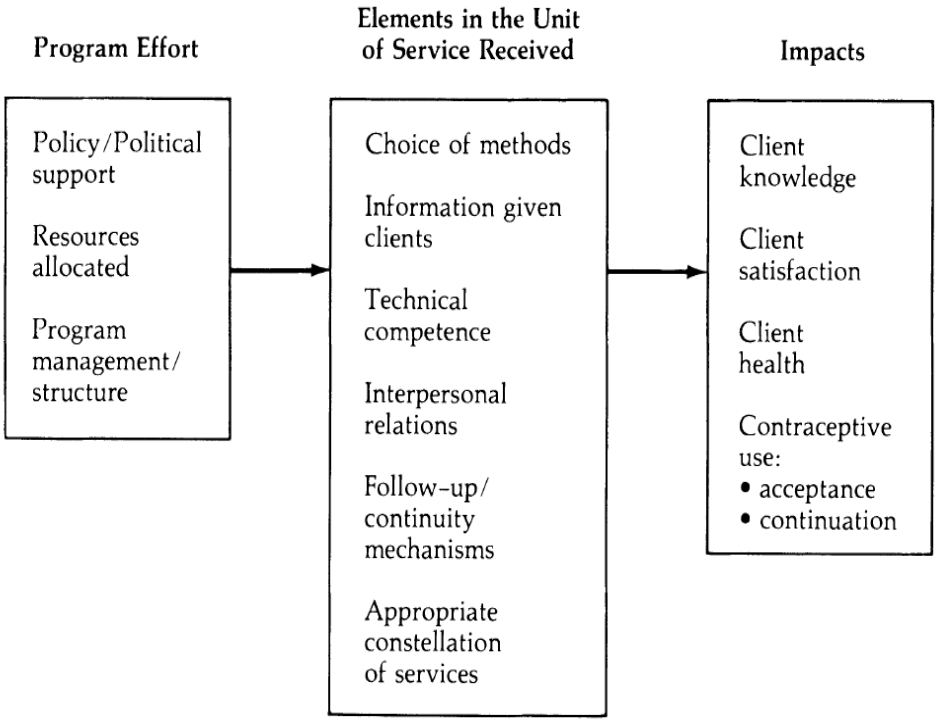


Figure (7) Source: Fundamental Elements of the Quality of Care: A Simple Framework Author(s): Judith Bruce(54)

3 CHAPTER 3: RESULTS

3.1 PROGRAM EFFORT

3.1.1 Policy/Political Support

Sudan Government committed to achieving International Conference on Population and Development ICPD 25+, Nairobi Summit 2019 by strengthening the Health System and Sexual Reproductive (SRH) commodity security. Family planning helps to protect women's and children's health by preventing early pregnancies and lengthening the time between births. All couples must have access to information and services to help prevent pregnancies that are too soon, too close together, too late, or too many(16).

The health of women and girls is essential to achieving success in all development goals; making investments more in their health will contribute to the development of peaceful, productive societies and the reduction of poverty. With this vision in mind, the country has implemented many policies and strategies promoting maternal and child health(55), including:

1. National Reproductive Health Policy 2022-2030(33).
2. Sudan’s commitment to ICPD 25 2019 (56).
3. National health sector strategic plan 2012-2016.
4. National Reproductive Health Commodity Security Strategy & Operational Plan 2012-2015.

Sudan has shown its commitment to Reproductive health, family planning access and availability, and commodity security through the policy documents and strategies listed above.

Although these interventions, strategies, and policies have received endorsement, a number of them have not been effectively implemented so far(55). Sudan's health policies and strategies need to be revised and updated to take into account the new problems brought on by multiple contextual changes(33).

In terms of policy and political support, The National Reproductive Health Policy (NRHP) 2022-2030 made remarkable progress in improving the quality of family planning services by providing more focus on family planning, addressing the funding gap by increasing domestic expenditure with more participation of private sectors, establishing coordination mechanisms and sharing information, addressing the reproductive rights aspect by merging family planning in all post-abortion services at all levels, and providing FP services about marital status or husband acceptance. Compare this with the National Reproductive Health Policy 2010 which focused on expanding service across Sudan without details and focusing on the quality of family planning services. Also, the NRHP ensures that young and adolescent people have access to sexual and reproductive health through information, education, and high-quality adolescent-friendly resources(33) However, Sudanese Laws hinder improving family planning service uptake at all levels, for example, by using emergency contraceptive methods. According to Article 135 of the Criminal Act 1991, abortion using an emergency contraceptive method is permitted under the law if the pregnancy is a result of a rape that took place within 90 days before the pregnant woman decided to have an abortion, and abortion is only permitted in hospitals for medical reasons and under specific regulations set by the Ministry of Health(57).

The National Reproductive Health Policy (NRHP) for the years 2022 to 2030 aims to enhance and promote family planning services as a means to ensure that both women and men have equal

opportunities to contribute to the nation's development. The inclusive approach has the potential to not only reduce poverty and disparities but also to ensure gender equality in the development process. Planning a family address can be done by considering the following points:

Regarding funding, the government plans to enhance the domestic budget allocation to facilitate the realization of Universal Health Coverage (UHC). This allocation is exclusive to sexual and reproductive health (SRH) services. The NRHP program collaborates with the Private Sector Department at FMOH and the Sudanese business federation to promote the availability of high-quality sexual and reproductive health (SRH) services in private facilities. Additionally, they work together to secure funding and implement SRH and behavioural change interventions (33).

In terms of laws, According to Article 135 of the Criminal Act 1991, abortion is permitted under the law if the pregnancy is a result of a rape that took place within 90 days before the pregnant woman decided to have an abortion. According to the National Public Health Act of 2008, abortion surgeries are only permitted in hospitals for medical reasons and under specific regulations set by the Ministry of Health. Sudan has not yet accepted the Convention on the Elimination of All Forms of Discrimination against Women (CEDAW). In 2018, Sudan made an announcement stating its intention to sign the Convention on the Elimination of All Forms of Discrimination Against Women (CEDAW). However, it expressed reservations regarding certain articles. Sudan is committed to promoting the rule of law and passing legislation that will strengthen the implementation of the International Conference on Population and Development (ICPD) commitments. Additionally, Sudan aims to protect and maintain human rights(58)(59).

The commitment made by Sudan at the International Conference on Population and Development (ICPD) 25 in 2019: The Sudanese government should expedite its efforts to fulfil its commitments and financial obligations towards the agenda of the International Conference on Population and Development (ICPD) Programme of Action, the Key Actions for Further Implementation of the ICPD Programme of Action, and the Agenda 2030 for Sustainable Development Goal. These commitments must be met comprehensively, efficiently, and within the specified time frame. There is a complete absence of unmet demand for family planning information and services, alongside the widespread availability of comprehensive, affordable, and secure modern contraception. This integration of sexual and reproductive health services into universal health coverage ensures equitable access for all individuals(60).

3.1.2 Resource Allocation

3.1.2.1 Financial Resources:

Funding is an important part of family planning commodities, National Reproductive Health Commodity Security (RHCS) Strategy 2015 goal is to raise funds for RH commodities from all resources at the national level, including the government, donors, the private sector, including the business sector. This will also require innovative approaches to improve Reproductive Health RH funding for supplies(61).

According to the Republic of Sudan Ministry of Finance and Economic Planning (MoFEP) 2021 approved budget the budget for the year 2021 is projected to allocate a total of 99 billion Sudanese Pounds (SDG) for health-related expenses. This total accounts for reproductive health centres (including family planning) in addition to Primary health centers. Also, the report shows that the Reproductive health (including family planning) 2021 budget estimation is as follows:

local (Domestic) expenditure of 65.0 million Sudanese Pound SDG, 633 million Sudanese Pound SDG from donor grants only from the United Nations Population Fund (UNFPA) with total expenses that Reproductive health (include family planning) for 2021 698 million Sudanese Pound SDG(62).

The trend of present health expenditures (per cent of GDP) in Sudan from 2000 to 2020 is shown in Figure 4. It indicates a decline in government expenditure on health over the past five years,which leading to funding for the SRH program.
The United Nations Population Fund (UNFPA) provides 100% of reproductive commodities and Family planning supplies in Sudan(63). UNFPA, in partnership with the National Medical Supply (NMSF), supplies reproductive commodities and Family planning supplies on behalf of the Federal Ministry of Health. Based on UNFPA Country Programmes (CP), UNFPA Country Programmes (CP) in the 2013–2016 cycle allocated 19.0 million US for family planning(64). However, UNFPA Country Programmes (CP) in the 2018–2021 cycle allocated only 9.0 million US(65). For reasons related to the decrease in external funding, the national RH policy focused on increasing domestic resources(33).
The present allocation of financial resources from the Sudanese government towards the health sector, specifically for the procurement of reproductive health (RH) commodities, is significantly inadequate. Consequently, the RH and family planning (FP) programs continue to rely heavily on external funding from donors. The discontinuation of donor contributions has been recognized as a major challenge for Sudan in the achievement of family planning objectives(62).
The finding indicated no separate budget line dedicated for Family planning services and commodities at the national budget, family planning allocation budget depends mainly on external donors as a source of funding for services. Financial resources are an important aspect of improving the quality of family planning services(62).

3.1.3 Human Resource:

Sudan has an inadequate number of healthcare professionals, with only 1.1 Physicians / Specialists and medical assistance per 0.6 and nurses and midwives per 10,000 people in 2015(24) (66). WHO recommendation for skilled health workers (physicians and nurses/ midwives) is 4.45 skilled health workers per 1000 population i.e. (45 per 10,000)(67). This figure falls significantly below the World Health Organization's recommended level which is considered necessary to achieve universal health coverage(68).
In Sudan, health workers, especially medical doctors, and experts, have continually sought opportunities and better job prospects by travelling inside Khartoum or other large cities. This internal movement has served as an establishing platform for some to pursue opportunities beyond boundaries. In contrast, health workers with diplomas and vocational education (such as community health workers, community midwives, and medical assistants) are often retained as sustainable cadres, delivering essential services in rural and remote communities (69). However, Sudan suffers a significant lack of healthcare providers, which is worsened by limited health financing. The country faces medical doctors/ Specialist shortage due to migration of professionals abroad as well as an uneven distribution of skilled professionals in both urban and rural areas. As shown in Figure 8, there is an apparent disparity in the number of graduated doctors compared to other health workers such as community health workers, community

midwives, and medical assistants. These statistics highlight the critical need for a larger health workforce to appropriately cover and service rural areas (24)
Many people who graduate from medical school are not hired by government health facilities, or if they are, they are paid poorly or have insufficient incentives or wages. As a result, a large percentage of them prefer to relocate abroad. Some people choose to leave rural areas in quest of improved living conditions in cities (69).

The Academy of Health Sciences (AHS), a government entity in charge of developing nursing and midwifery education in the country, was founded to assist universities in addressing the demand for healthcare professionals (59). The workforce comprised medical assistants (2668), nurses (8754), midwives (16138), and B.Sc. nurses (3480) in the most recent HRH survey in 2015 (66).
The workforce comprised medical assistants (2668), nurses (8754), midwives (16138), and B.Sc. nurses (3480) in the most recent HRH survey in 2015)(69)
However, newly formed healthcare institutions in Sudan have experienced several obstacles in recent years. Among these concerns are difficulties in designing an acceptable curriculum, a significant lack of educational resources to maintain quality standards, a dearth of trained medical staff due to emigration, and insufficient clinical training facilities and teaching hospitals (70).
UNFPA funds the Academy for Health Sciences, which includes a variety of programs such as training for village midwives and health visitors, as well as bachelor's degree and certificate programs in midwifery. Furthermore, UNFPA assists in the training of midwives in states with high maternal death rates and sexual and reproductive Health. (71).
In Sudan, delivering high-quality SRH (Sexual and Reproductive Health) services is complicated by a lack of skilled human resources and a large turnover of trained employees. Many healthcare institutions rely on health workers rather than physicians, needing investment in improving their ability to meet the demand for high-quality service. (33). A lack of human resources and experienced employees for family planning services poses various barriers to providing effective treatment throughout the country. As a consequence, many people have difficulty getting these essential services. The effort to recruit and retain supply management experts is a widespread issue addressed by many administrations. Ministries of health frequently lack the people required to successfully manage the drug supply chain. The problem is worsened further by significant employee attrition, especially in family planning (FP) programs, which depend substantially on a continuous flow of contraceptives through the supply chain's various stages. The implications of lacking qualified and dedicated employees managing the system can be significant, including irregular contraceptive delivery, frequent out-of-stock, and a loss of program credibility in the eyes of clients (72). Similar human resource shortages in the healthcare sector at the primary healthcare level in remote areas have been observed in contexts comparable to Sudan in Ethiopia. The Sudan Federal Ministry of Health (FMoH) can adopt similar measures to address human resource shortages (73).

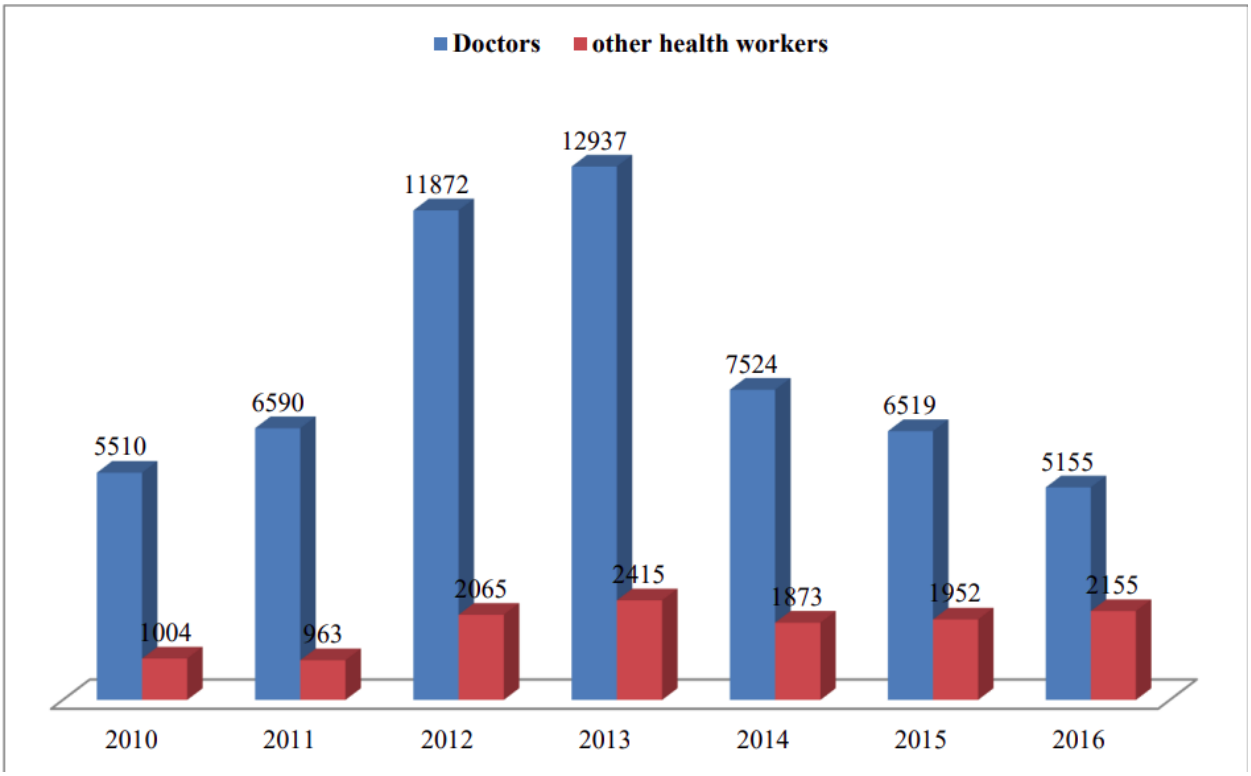


Figure 8 Number of certified Health workers from 2010 to 2016. (24)

3.1.4 Family Planning Commodities (Supply Chain):

Supply chain management is responsible for coordinating a broad network of actors involved in the supply chain, such as procurers, manufacturers, shippers, distributors, warehouse agents, facility managers, and service providers. Its primary objective is to establish an efficient system that ensures the timely transportation of products from the port to central and sub-national warehouses and to service delivery points and populations. Stockouts of popular contraceptive products are a prevalent issue(30).

Through the National Medical Products Fund (NMSF), the State Medical Supply Fund (SMSF), and local stores at the area level, the Sudanese Federal Ministry of Health (FMoH) maintains the supply of family planning products to establishments providing these services (27).

The FMoH has successfully recruited personnel in all but one state, Khartoum, resulting in uniform pricing, streamlined purchasing procedures, well-stocked and efficiently managed storage facilities, and distribution assistance from local partners such as UN agencies (UNFPA) and NGOs. Managing stocks involves the use of both manual methods, such as stock cards, and electronic technologies. Land transportation is utilized for the delivery of bulk NMSF shipments to each state's SMSF warehouse. To prevent shortages at these warehouses, a three-month buffer stock is maintained by the NMSF. This ordering technique not only saves storage space but also reduces the SMSF's capital investment (74)

The National Medical Supply Fund (NMSF) confronts major obstacles in successfully managing the provision of public health services, particularly at primary health care levels of the healthcare

system. Staffing constraints in the supply chain system cause difficulty in keeping qualified employees and inadequate levels of oversight. As a result, repeated stockouts, particularly in distant places, have become routine. Stockouts are exacerbated by reliance on donors for contraceptive procurement, the lack of a budget item line for Reproductive Health (including family planning), and challenges with quantification and forecasting. Furthermore, there is a lack of accurate data dissemination between supply chain levels (state and federal), as well as insufficient information sharing in collaboration initiatives between other vertical programs, such as the sexual and reproductive health program and other Ministry of Health programs. (33)(61).
The District Health Information System (DHIS2) is currently being utilized as an electronic platform for collecting and analyzing data at the local level. This system covers approximately 62% of all localities. Efforts are currently being made to incorporate vertical programs into the integrated health facility reports. This is being done to reduce verticality and improve the flow of data to the Health Information System (HIS). (33). the DHIS2 platform expanding its coverage to 144 out of 189 localities across seventeen states, including the recent addition of Khartoum State in 2021. Although there has been significant progress in DHIS2 reporting, with an increase from 30% in 2016 to 64% in May 2020, reporting rates have remained stable since December 2018 at 61.5%. It's worth noting that some states, like Blue Nile, Algazira, and Algadarif, have achieved a commendable 100% data reporting rate, while others have not. Additionally, in May 2020, only 122 of the 144 DHIS2 areas were reported into the system. This difficulty was primarily caused by a lack of internet connectivity, but it also exposes the restricted capacity in the routine HIS as a result of several challenges, including both political and health reasons such as the COVID-19 pandemic)(75).

There is a significant gap in the availability of family planning services in Sudan. In the 2016-17 period, only 63% of facilities were able to offer these much-needed services, which is below the target of 75%. The primary cause of this shortfall can be attributed to inefficiencies in the supply chain systems, which directly affect the availability of these services. Unfortunately, the lack of qualified supply chain personnel, especially in remote public facilities, exacerbates the situation (27). The root causes of these supply chain problems or disruptions include various factors such as Sudan's inadequate physical infrastructure, a shortage of trained and dedicated supply chain management professionals, and insufficient funding. These challenges make it incredibly difficult to achieve the goal of providing family planning services to the people of Sudan. However, with a focused approach and the right strategies, we can work towards bridging this gap and ensuring that people have access to the services they need(72) (27).
Only 30.7% of total SDPs (Service Delivery Points) used a verified logistics form for ordering and reporting, according to the MCH 2020 survey. Furthermore, 18.0% of the analyzed SDPs claimed to employ logistical forms, but their availability was not confirmed by data collectors, affecting nearly half of the assessed SDPs (27).
The MCH 2020 survey revealed that a mere 30.7% of Service Delivery Points (SDPs) utilized verified logistics forms for ordering and reporting. Moreover, 18.0% of SDPs claimed to use logistic forms, but their availability was not confirmed by data collectors, impacting almost half of the assessed SDPs (21). It is critical to accurately calculate buffer supplies by examining lead time at the facility level, to efficiently manage supply chains and avoid stockouts. The length of lead time directly affects buffer stocks required, with longer lead times increasing the risk of stock shortages. Therefore, precise estimation of lead time is crucial for effective supply chain management (27).

According to the findings, it was revealed that most states, except for the Blue Nile and South Darfur SDPs, estimated a lead time of less than two weeks. The West Kordofan and South Kordofan SDPs had a lead time of around 1 to 2 months. However, the East Darfur SDPs had a varied lead time ranging from 2 to 4 months. Only a small number of institutions in different states reported lead times exceeding six months. (27). In conclusion, the distance between health facilities and the central warehouse has an impact on the timeline of purchase orders and the delivery of products to the warehouse. This translates to a more expedited process for facilities that are situated in closer proximity to the warehouse.

Last-mile distribution challenges to remote areas of FP commodities, including human resource shortages, capacity constraints on supply chain management functions, inadequate record keeping, and infrastructure deficiencies, such as transportation and distribution infrastructure difficulties in Sudan. Similar results were discovered in a Nigerian study. The study reveals that primary healthcare centers in rural areas barely function, are underutilized, and are frequently overlooked in terms of physical infrastructure, human resource investments, capacity to provide essential services, lack of equipment, essential medicine supply, and trained capable workforce(76). This impacts the availability of FP commodities negatively. To address one of the most significant issues affecting the use of FP commodities and services, particularly stockouts of adopted commodities. Adopting interventions comparable to those in Senegal and Zimbabwe. These interventions have been effective in ensuring the availability of services and supplies at all primary healthcare (PHC) level (77) (72) (78).

3.1.5 Program Management/ Structure:

Sudan's health system is decentralized, with the Ministry of Health in charge of the system at the state and federal levels. The Ministry of Health, the private sector, and non-governmental organizations (NGOs) provide services. The reproductive health program is built around the "four pillars" of safe motherhood: 1) family planning; 2) focused antenatal care; 3) skilled birth attendance, which includes essential commodities, drugs, and equipment; and 4) emergency obstetric care and neonatal care. However, there is a lack of health spending as well as donor support. The insecurity of the security situation, as well as the scarcity of qualified nurses and midwives, pose significant challenges. Steps taken to address the shortage of midwives include providing basic training to community-level midwives to bridge the gap until an adequate number of fully qualified midwives are available (79).

The Federal Ministry of Health (FMoH) plays an important role in the development of national health policies, strategies, monitoring and evaluation programs, as well as training and external interactions. The state level is concerned with state plans and strategies, and it is based on federal laws for plan financing and implementation. The key issues of the municipalities are implementation and service supply. Inadequate coordination leads to duplication of activity among various players(24).

The NMSF is in charge of ensuring that medicines (including reproductive health commodities) are delivered to all health centers, including those in rural areas, using temperature-controlled trucks. Medicines are delivered to healthcare facilities under a strict schedule that must be established early in the project's development.

Reproductive health is integrated at all levels of Primary Health Care (PHC), however, like many other programmes technically it is vertical. Vertical programs typically operate with their independent health information systems (HISs) and often struggle to effectively share their data with the central health information system. At all levels of healthcare, women were given

informative talks by health providers about family planning. Afterwards, they were directed to consultation rooms where they received counsel and were offered a choice of family planning methods. Clients were also provided with advice on follow-up visits for the n management of potential complications. If site staff were not equipped to manage a complication, clients were referred to a district hospital using a standard referral form. The health system district management team oversaw the services provided to ensure the quality and smooth operation of the activity(33).

3.2 ELEMENTS IN THE UNIT OF SERVICE RECEIVED

3.2.1 Choice of Methods:

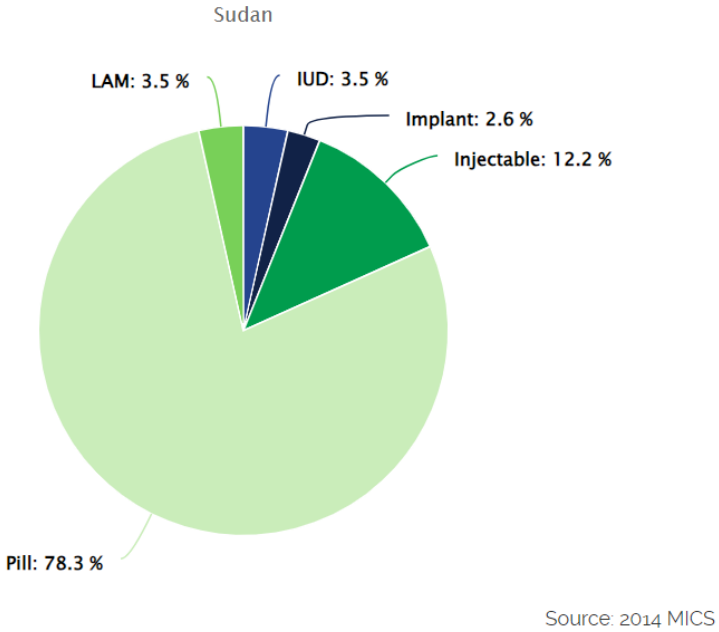
The client's preference for family planning methods is an important factor in determining the Quality of Care in family planning(53). Figure 9 below shows that Contraceptive pills are most widely are the most widely used method (78.2%), followed by injectable (12.2%) (16). contraceptive methods are offered by mobile clinics and outreach services.

Based on the study conducted on MCH 2020, it has been found that the selection of a contraceptive method heavily relies on the availability of services offered at Service Delivery Points (SDPs). The accessibility of contraceptive supplies is directly impacted by the services offered. For example, while all healthcare levels provide at least two contraceptive methods (pills and injectables), the implant method can only be availed at the secondary and tertiary levels(27). It will be plausible to assert that access to certain methods may be limited in certain locations.

Geographic location has a huge impact on the methods of family planning available. According to the MCH study, the following are clients' replies to getting their preferred family planning method: In the states of Sinnar, Blue Nile, and North Kordofan, all clients received their desired option. In comparison, Kassala had 50% of clients using their preferred technique, while North Darfur had 56.3%. This variance can be related to factors such as the availability of preferred methods in stock and the presence of competent family planning physicians in a facility(27). This shows that access to health services near clients' homes is also important in impacting their choices. (27). This shows that access to health services near clients' homes is also important in impacting their choices.

The findings regarding client choice of contraception among 100 women in Khartoum Sudan found that 70% of Clients use doctors prescribed to get free contraceptives from health care pharmacists, while the remaining 30% were obtained independently from privet pharmacists without prescription(80).

.



ure

Figure 9: Modern Contraceptive methods (81)

3.2.2 Information given to clients:

Clients who receive simple correct, and unbiased information customized to their requirements are more likely to be satisfied with their chosen method(53). The current National Family Planning Policy 2022 - 2030 policy statements are committed to improving the quality of health care through information, education, and communication (IEC) for reproductive health and family planning services(33).

Time health care providers allocated to provide the client to provide information about family planning information affect client satisfaction, according to an exit interview conducted in 2020 shows that more than 80% of clients are satisfied with the allocated time for consultation(27). In another study carried out in Sudan in 2015, 35.0% of people got their information about family planning from the media (radio, TV, social media, and information communication material IEC), while 25.5 per cent got it from health personnel, 8.0% from relatives and friends, and 9.0% from their husband (53).

3.2.3 Technical competencies:

To ensure the delivery of high-quality and safe patient care, medical schools around the world are putting more emphasis on improving clinical teaching and implementing competency-based medical education(70). Technical competencies refer to the clinical techniques used by providers, the implementation of protocols, and the application of septic procedures when carrying out clinical conditions. Technical competencies of the service provider about the satisfaction of the client (82).

Guidelines for family planning services are essential because they provide a fast reference for the use of appropriate methods and the standardization of family planning services provided to clients; they also contribute to the most effective and efficient utilization of available resources. Sudan Facility Based Assessment for Maternal and Child Health Commodities and Services 2020 reveals that only 18.9% of facilities have family planning guidelines and 28.6% have family planning services checklists (27). Primary family health centres reported the highest availability of FP guidelines, with 23%, followed by 21% at the secondary level and 21% at the tertiary level. Inadequate funding and resource allocation for reproductive health services, including family planning, may be one of the reasons for this percentage of availability guidelines for family planning at various levels of Health facilities.
To expand the reach of basic healthcare facilities, a comprehensive primary healthcare (PHC) on-job (in-services) training program was created and evaluated for medical assistants. The objective of this program was to enable medical assistants to deliver maternal and child health (MCH) services, specifically antenatal care (ANC) and family planning (FP), in areas where there is a lack of health visitors or assistant health visitors. However, (PHC) job (in services) antenatal care (ANC) and family planning (FP), trainings are not regular (38).
According to Sudan Facility-Based Assessment, only secondary level of care locality hospitals and tertiary-level-of-care state and specialized hospitals are allowed to implant contraceptive methods, this is due to the availability of trained health care providers trained in the insertion and removal of implants as well as the availability of other requirement including equipment and suitable environment. (Figure 10) below shows Health facilities at different levels (primary secondary and tertiary) with personnel trained in family planning services shows that overall, 64% at different levels (primary secondary and tertiary) with personnel trained in family planning services. Eighty-two per cent at the secondary level, 78.8 in the tertiary level and 67% at the primary level as part of the SDP's regular service delivery. However, Only 17% of the staff were trained in the insertion and removal of implants(38). The presented research highlights the issue of restricted access to adequately qualified individuals in the provision of family planning services across various levels of healthcare facilities. It suggests that job shifting has the potential to address this gap.

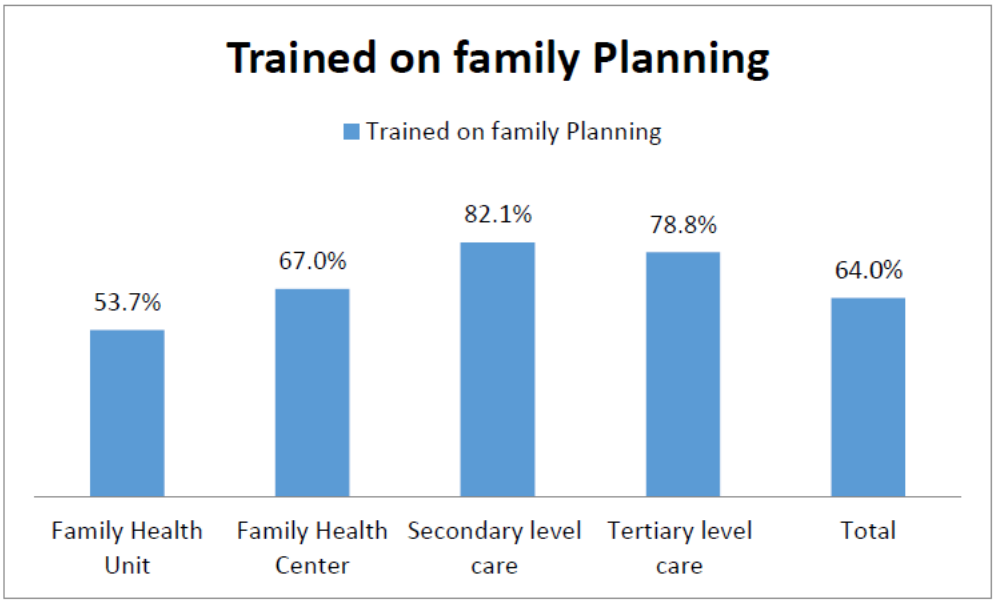


Figure 10 Percentage distribution Services Delivery Point (SDP)- Health facility at different levels (primary secondary and tertiary) with personnel trained(38).

3.2.4 Interpersonal Relations:

This component describes client-provider communication that is based on mutual respect, a good connection with the client, confidence, and gender- and cultural sensitivity. Patient satisfaction, treatment compliance, and health outcomes can all be improved by having positive interpersonal interactions and effective interpersonal communication between the patient and the healthcare provider(53). Findings were reported from community-based projects in Sudan, which showed that the training of midwives to deliver health messages related to family planning and other issues significantly improved contraceptive usage. The findings from the Maternal and Child Health (MCH) 2022 survey report are as follows: The findings indicate that a greater proportion of clients who got healthcare services in rural primary care settings (94%) reported being treated with kindness and consideration, in comparison to(86%) clients who visited urban primary care facilities. Additionally, it was observed that the number of clients satisfied with FP services provider attitudes at the rural primary care level was 91% similar compared to the urban primary care level 90.8%.(27). This evidence implies that the quality of family planning services affected by health provider interpersonal relation affected client follow up and continuation family planning choices.

3.2.5 Follow-up/continuity mechanism:

High-quality services should provide some mechanism for follow-up with FP clients to address the client's concerns, manage side effects, provide guidance on issues of adherence, and facilitate method switching or discontinuation -in cases where method switching is provider dependent(53). The 'follow-up mechanism' examines how service providers motivate clients to continue using their services through adequately informed mechanisms such as community

broadcasting, client-based communication systems (return appointments), and making phone calls or home visits (82). It's important to mention that the Client's waiting time before receiving the services can affect the follow-up and continuity mechanism (82).PHC services in some remote areas are provided by medical assistants, community health workers (CHWs), community midwives, and community volunteers.
midwives and community health workers provide hormonal contraceptives and condoms and refer clients to secondary and tertiary health facilities for other modern family planning methods.

In areas where there are no basic health institutions, midwives offer ANC including Family planning services for women in their place of residence (home visit)(83). As part of antenatal care, a follow-up strategy that includes home visits to discuss the advantages of contraceptive methods can increase client utilization and access to modern contraceptives., the report suggests visiting individuals to discuss the advantages of contraceptive methods. The number of women seeking to initiate modern contraceptives has increased by five times. However, there is a lack of trained midwives to reach women in remote areas(84).

that client waiting time before receiving services at health care level, geographical distance from health services, and affordability of services can affect client continuity on services. a study conducted in Kenya reveals clients waiting time before receiving services/follow-up, clients waited on average, 74 minutes to be seen for family planning services(76)

3.2.6 Appropriate Constellation of Services:

Family planning is part of the existing SRH services at the PHC level in Sudan, along with antenatal, postnatal, newborn, and child health care. The same facilities mainly provide HIV or integrated family planning services, with a minimal referral(85).
As mentioned earlier, family planning is already integrated into many aspects of its primary healthcare (PHC) system. The introduction and integration of family planning services, including home visits, were mainly to expand access to primary health care to rural and hard to reach areas /underserved communities. It happens along a continuum of care, improves family planning coverage, and results in cost savings within the overall health system(33).
Utilization and access to maternal services, including modern contraceptive methods and enhanced quality of care, have increased as a result of the integration of family planning services. Ethiopian study indicates that integrating family planning services with maternal health care is a successful and cost-effective method to increase the utilization of maternal health care services. The Ethiopian government implemented a strategy known as the "health extension programme" (HEP) to provide services in rural regions. The primary objective of this strategy is to increase equitable access to community-based preventive, promotive, and curative healthcare interventions (86).

3.3 Impact:

3.3.1 Client Knowledge: -

Client knowledge refers to the client's understanding of family planning methods, correct usage of the method, possible side effects, and accessibility of clients (geographical access) to healthcare providers were found to be factors that affect the quality of care in family planning services(87).

A study carried out in-depth interviews with 335 women consulting at the obstetrics and gynecology clinic in Omdurman military hospital, Khartoum Sudan about the use of hormonal contraception, the study find out, among total interviews knowledge about different types of hormonal contraception, common adverse effects caused by a hormonal contraceptive, and assessing women's attitudes about the use of hormonal contraception revealed that 60.6% of total interviews used pills as a method of birth control; 82.3% of them could tell the difference between the various types, while 17.7% couldn't tell the difference between the various types. 71% of them are aware of what to do if they forget to use a contraceptive, compared to 29% who are unaware of what to do(87).

Another study in Sub-Saharan African countries to find out the views of men partners in married couples toward contraception. It showed that the majority of Sudanese men (91%) would support family planning if their wife's health were in danger, but only more than half 57% would support it if financial constraints were a reason. The study also found women who discussed family planning with their husbands are less likely than those who don't accurately report their husband's disapproval (88).

3.3.2 Client Satisfaction:

Client satisfaction measurement allows for analyzing how patients are satisfied with health care, finding the quality of care issues, and evaluating quality service delivery and health care(89). Client satisfaction with FP services offered within healthcare facilities is an important factor contributing to the uptake of contraceptives. Therefore, measuring client satisfaction will enable a better understanding of the offered FP service quality(90).

Exit interviews were done in 2020 to measure customers' satisfaction with family planning (FP) services provided by SDPs. The survey included several topics, including technical factors, organizational elements, interpersonal aspects, and overall satisfaction.

According to the findings:74.69% of clients were satisfied with healthcare providers' attention to technical aspects of family planning services, 72.6% of clients were satisfied with the organizational features of the services, such as wait time, cleanliness, privacy, and service time.90.9% of those polled reported satisfaction with the interpersonal aspects of healthcare providers' services, such as civility, respect, and attitude. Client satisfaction with family planning services was 93.2% of clients satisfied with the service they received (38) (27). From the finding, high levels of client satisfaction with various aspects of service delivery, such as technical

competency, organizational structure, and interpersonal communication, indicate a positive impact on FP outcomes and client-centred FP services.

In Port Harcourt, Nigeria, a study was conducted to assess client satisfaction with FP services. Results from the study, which involved 195 participants, showed that an overwhelming 87.2% of respondents were satisfied with the overall quality of the FP services provided. Notably, all clients (100%) reported that the facilities were conveniently located, clean and that they were treated with respect. However, it was observed that 51.3% of clients had to wait for an hour before receiving their desired contraceptive product. (91).

In general, as in table 1 below, the findings suggest that clients expressed a high degree of satisfaction with the service that was provided. When analyzing all levels of care, which includes primary, secondary, and tertiary, a significant majority of clients, exceeding 80%, expressed satisfaction across various outcome dimensions. The findings remain consistent when examining the data based on the state, urban or rural classification of all levels of care service delivery points (SDPs). The high level of satisfaction among clients is expected to result in increased utilization of FP services and improvement in contraceptive uptake(91).

Category	Percentage		
	Client satisfied with the service you received	Client continue visiting this SDP in future	Client will recommend to relatives or friends to come to this clinic
Type of Facility			
Primary Health Unit	80.7%	96.6%	94.3%
Primary Health Centre	90.6%	98.3%	96.7%
Secondary	90.0%	95.0%	96.7%
Tertiary	86.1%	91.7%	88.9%
State			
Northern	98.0%	98.0%	91.8%
River Nile	100.0%	100.0%	100.0%
Red Sea	0.0%	0.0%	0.0%
Kassala	75.0%	100.0%	100.0%
Gadarif	100.0%	100.0%	100.0%
Khartoum	80.0%	90.0%	90.0%
Gazira	77.1%	89.6%	89.6%
White Nile	81.3%	95.8%	95.8%
Sinnar	100.0%	100.0%	100.0%
Blue Nile	100.0%	100.0%	80.0%
North Kordofan	100.0%	100.0%	100.0%
West Kordofan	92.0%	98.0%	98.0%
South Kordofan	87.2%	95.7%	95.7%
North Darfur	56.3%	100.0%	93.8%
East Darfur	89.5%	100.0%	100.0%
Central Darfur	100.0%	100.0%	100.0%
West Darfur	0.0%	0.0%	0.0%
South Darfur	88.9%	100.0%	100.0%
Urban/rural Location			
Urban	88.8%	94.9%	91.8%
Rural	87.2%	97.4%	96.6%

Table 1 Percentage distribution of clients' perception of FP service outcome aspect by type of level of care, MCH Survey, Sudan, 2020 (27).

3.3.3 Client health:

Client health in this refers to the probable method side effects, additional adverse reactions such as drowsiness mild headaches and migraines fluctuations in mood, and acne, if side effects are a problem assure them that they are frequent and safe and that they will usually go away on their own. If client desires to change methods, assist her in making a decision(92). There is a significant prevalence of experiencing and fearing contraceptive-induced changes in menstrual bleeding and physical pain, particularly headaches, among hormonal contraceptive users(80).

It has been observed that a significant number of women who use hormonal contraception tend to experience changes in their menstrual bleeding and physical discomfort. These changes include headaches, which some women fear may be caused by their method of birth control. A study conducted at the Alahfad Center for Family Health in Khartoum, Sudan, revealed that 77.8% of women of reproductive age expressed concern about potential side effects, while 11.1% were unaware of the possible effects of their contraceptive method(93).

3.3.4 Contraceptive use and continuation:

Contraceptive counselling is important to ensuring that women receive adequate information for continued use of contraceptive methods regardless of the method of contraception they choose, all clients should receive high-quality information from family planning counselling by healthcare provider (94).

A study conducted in Sudan in 2013 about the use of family planning methods in Kassala, Eastern Sudan, showed that the most common reasons given by respondents for continuo use or not using family planning are: non-availability of family planning (2.7%), and illness (1.2%)(48).

According to data from the Nigeria Demographic and Health Survey (NDHS), a study was conducted on a sample of 4553 women aged 15 to 49 years. The study found significant correlations between various factors, such as education level, religion, location, number of children, occupation, decision-making style, and the probability of discontinuing the use of modern family planning methods. These findings provide valuable insights into the complex dynamics of family planning usage in Nigeria(95).

Overall, the findings indicate the crucial role of family planning counselling in imparting knowledge, surmounting obstacles, and inspiring women to sustain their contraceptive practices. Counselling has the potential to optimize the provision of family planning services and promote continued usage of contraceptive methods among clients.

4 CHAPTER 4: DISCUSSIONS

4.1 Discussions:

Sudan is making progress in improving their family planning services by adopting the National Reproductive Health Policy 2022-2030 and placing more focus on family planning, the new policy mandates that family planning services should be offered without bias and with a focus on promoting all methods equally. Clients should receive client-centred information and education.

Sudan's health system has been weakened due to low government spending, leading to a negative impact on Sexual and reproductive health services. The current major issues that need to be addressed are family planning commodity security, shortage of human resources, and technical competency gaps. While patients are content with the current services, it is crucial to address these gaps in order to improve the overall quality of the system.

Client satisfaction with Family planning services in Sudan was surprisingly positive, despite limited resources for family planning. Patient satisfaction is important for determining the quality of healthcare provided and the quality of services. More effort needs to be put into addressing misconceptions and educating the population about their rights to improve satisfaction and meet the demand for better healthcare services.

4.1.1 Family planning Commodity security:

Research has shown that the current financial allocation of the Sudanese government towards the health sector, particularly for the procurement of reproductive health (RH) commodities, is not sufficient. This has resulted in family planning (FP) and RH programs depending heavily on external funding from donors. However, this overreliance on donor contributions presents a significant obstacle to achieving family planning goals in Sudan.

It is important to note that not all localities have access to the district health information system (DHIS2) at the locality level. Currently, only 62% of all localities are covered. Additionally, some primary health facilities still use paper-based data collection tools, like stock cards. This can lead to data quality issues and challenges with timely reporting, especially if trained personnel have a high turnover rate. Inaccurate family planning consumption data can result in delays in sharing information with the state ministry of Health (SMoH), which can lead to stockouts and shortages of commodities. These challenges are particularly prevalent in rural areas compared to urban areas.

It is essential for the government to prioritize addressing the gaps in Family Planning Commodity Security. This measure will help improve the quality of family planning services and achieve better outcomes. In addition, implementing similar interventions in Sudan could have a significant positive impact.

Addressing the challenges in Sudan may require exploring successful interventions implemented in other countries. Adopting interventions similar to those implemented in Senegal and

Zimbabwe could be worth considering. However, it is crucial to approach this with caution and ensure that decisions made are well-informed and appropriate for Sudan. In both Senegal and Zimbabwe, the Ministry of Health established quality improvement teams responsible for maintaining a secure supply chain through active tracking and restocking systems. These interventions have been effective in guaranteeing the availability of services and commodities at all levels of primary healthcare (PHC).

4.1.2 Human resource need and technical competency:

The human resource needs and technical competency in Sudan show the significant hurdles that healthcare facilities face when providing family planning services. The findings of the study show that the credentials and competency of staff members have a significant impact on the range of services and family planning options available to the community. Midwives, nurses, and medical assistants provide contraceptive methods at the primary care level. Meanwhile, at the secondary and tertiary levels, the provision of contraceptive techniques, including specialised ones like implants, is limited to physicians and qualified medical personnel. This disparity in service delivery results in an uneven distribution of family planning services, which disproportionately affects women who use long-acting methods. Sadly, these women are frequently referred to larger secondary and tertiary healthcare facilities, providing considerable hurdles for those living in distant and disadvantaged regions. This is worsened by the severe shortage of healthcare staff at all levels of care, as well as insufficient health budget. These shortcomings have an immediate effect on the availability of midwives, professional nurses, and nursing auxiliaries, worsening the nationwide shortage of appropriately trained individuals capable of providing comprehensive family planning services.

In Sudan, healthcare provision faces various challenges, including workforce capability, service disparities, and resource constraints. Addressing these challenges requires targeted interventions. To improve access to family planning services in underserved remote communities, the Federal Ministry of Health could provide essential training to community health workers (CHWs) so that they can offer certain family planning services under qualified professionals' supervision. This approach has proven successful in Ethiopia and other countries. However, regulatory restrictions prevent midwives, nurses, and medical assistants at PHC workers in Sudan from fully administering or prescribing certain family planning options. Revising policies and guidelines and providing adequate training can empower midwives to provide family planning services and address the shortage of workers in the region. Identifying and addressing potential barriers or limitations is vital to the intervention's success. The Federal Ministry of Health plays a crucial role in implementing policies and initiatives that ensure the equitable distribution of healthcare professionals, which is essential for providing high-quality family planning services to everyone.

4.1.3 Demand and Client Satisfaction:

The recent findings regarding client satisfaction with Family planning services in Sudan have been surprisingly positive, despite limited resources for family planning and Sexual and reproductive. It's important to measure patient satisfaction as it helps understand how patients feel about their care. In this case, the client's expectations may not have been very high, but they were still content with the services provided. This is similar to a study conducted in another country, but different from a study in Nigeria where client satisfaction was reported as 100%. Although clients in Sudan are generally aware of family planning, there are still many misconceptions that need to be addressed. To improve satisfaction and meet demand, more attention needs to be paid to the demand sector. The government can take steps to improve expectations and demand for better quality healthcare services, and education is key in empowering the population to understand and assert their rights in this area.

4.1.4 Relevance of the Framework:

The use of the Judith Bruce framework has resulted in significant success in evaluating the quality of family planning services in the Sudanese environment. The detailed analysis provided by this framework has been useful not only in assessing the degree of service quality in Sudan but also in gaining significant insights from the achievements of other countries. Due to the significant influence of Sudan's current security and conflict scenario, this undertaking took on increased significance. However, a major weakness of the existing framework is the absence of security and conflict elements as variables of consideration. In the context of Sudan, where these elements have a considerable impact on the healthcare landscape, their absence jeopardizes the framework's overall correctness and ability to capture the intricacies of the situation. Recognizing the delicate interaction between service quality, security, and conflict is essential for a comprehensive evaluation.

4.2 Study Limitations and Strengths

The study limitations are Limited access to information due to ongoing conflict and infrastructure damage in Sudan made it difficult to conduct a thorough literature review on family planning services. The Federal Ministry of Health's database was mostly unavailable during the study period, and there was a lack of studies on the topic.

The strength of the study that

The study identifies areas that require more research to enhance the quality of healthcare in Sudan.

5 CHAPTER 5: CONCLUSION AND RECOMMENDATIONS

5.1 CONCLUSION:

The situation of Sudan of Economic status, Political instability, outbreaks, conflict, Refugees influx, and IDPs in the Darfur Region the GDP makes the government prioritize expenditure of the country's income on other priorities than health and allocate very little budget for Health (Less than 2%) and less Health allocation of Sexual Reproductive Health. The sexual reproductive health services depend mainly on external aid from Donors (100% on UNFPA support). The Government advocates finding other sources of Funds allocated to Sexual reproductive Health services by including more stakeholders for example (the privet sector) to fill the fund gap in Health.

As we previously mentioned, the inadequate financial resources allocated to sexual reproductive health input, process, and outcome is the root cause of the quality issues in family planning services in Sudan. Nevertheless, the study identified certain factors that can help or hinder the improvement of family planning services in Sudan. Despite the integration of family planning services into the PHC, insufficient financial resources and shortages in FP commodity security have created substantial gaps. The obstacles identified are mainly related to human resource needs, technical competency, and family planning commodity security. To enhance the technical competency and interpersonal skills of providers, we must address human resource needs. As previously stated, technical competency and interpersonal skills are closely intertwined. By providing high-quality education and in-service training, we can enhance the technical competency of providers and their interpersonal skills. This will eventually result in the improvement of family planning services in Sudan.

The following recommendations aim to enhance the quality of family planning services and should focus on improving the areas listed above through the implementation of proven and effective measures.

5.2 RECOMMENDATIONS

From the Study findings, the following recommendation needs to improve the Quality of Family Planning Services in Sudan.

- Increase health budget: Given Sudan's precarious situation, including limited resources and infrastructure, tackling the essential issue of SRH necessitates a specialized strategy. In such a situation, it is even more critical for the Sudanese government to carefully deploy funds from the national health budget for the procurement of RH commodities.

- Designate funds for FP: It is important to spend a portion of the health budget on SRH commodity procurement, guided by a thorough understanding of Sudan's FP and population dynamics in the context of the country's fragile status. Despite the constraints imposed by the current dangerous circumstances, the government might use this opportunity to make focused advances toward strengthening RH services. This planned contribution indicates a commitment to meeting Sudan's population's urgent RH needs while keeping the country's sensitive environment in mind.

- To minimize reliance on external donations for the procurement of RH commodities, the government should investigate and implement sustainable funding mechanisms. This could include public-private partnerships, health insurance programs, or health-related taxes to generate additional funds for reproductive health services. Collaboration with international organizations and development agencies may also facilitate efforts to mobilize resources. In addition, stringent surveillance and evaluation of these financing mechanisms will be necessary to ensure transparency, accountability, and the efficient allocation of financial resources for RH commodities.

- Focusing on family planning services, the Federal Ministry of Health should design and administer comprehensive training programs for healthcare professionals. These programs should target midwives, nurses, and medical auxiliaries to increase their technical proficiency in providing a wider variety of family planning methods. In addition, the government should provide attractive incentives, such as monetary compensation or opportunities for career advancement, to encourage healthcare professionals to specialize in family planning services and serve in underserved areas. Regular evaluations of the effectiveness and distribution of training programs and the workforce should guide adjustments and enhancements.

- The government should invest in expanding and strengthening community health worker (CHW) programs to resolve the paucity of healthcare workers and increase access to family planning services. This entails providing comprehensive training to community health workers in the administration of family planning services, including the provision of contraceptive methods under qualified supervision. To address the specific

requirements of diverse communities, the training should emphasize cultural competency and sensitivity. To maintain service quality and adherence to best practices, the government should also provide adequate supervision, support, and ongoing skill development for community health workers.

Reference:

1. WHO. WHO. [cited 2023 Jul 30]. Contraception. Available from: https://www.who.int/health-topics/contraception#tab=tab_1

2. Rakhi J, Sumathi M. Contraceptive methods: Needs, options and utilization. Journal of Obstetrics and Gynecology of India. 2011;61(6):626–34.

3. WHO. Modern methods of contraception [Internet]. 2023. Available from: https://www.who.int/data/gho/indicator-metadata-registry/imr-details/3813#:~:text=Modern methods of contraception include,cap and spermicidal agents)%2C lactational

4. World Health Organization (WHO). Contraceptive prevalence [Internet]. Available from: https://www.who.int/data/gho/indicator-metadata-registry/imr-details/5

5. Prb.org. Unmet Need for Contraception: Fact Sheet [Internet]. Available from: https://www.prb.org/resources/unmet-need-for-contraception-fact-sheet/

6. Tafese F, Woldie M, Megerssa B. Quality of family planning services in primary health centers of Jimma Zone, Southwest Ethiopia. Ethiop J Health Sci. 2013;23(3):245–54.

7. Geography of Sudan [Internet]. 2020. Available from: https://fanack.com/sudan/geography-of-sudan/

8. Ministry of Security and social Development General Directorate for Women. Women's participation in Media, Information Technology & Communication Mediums As Effective Means for Women's Empowerment and Progress in Sudan. 2017.

9. Sudan Population 2023 (Live) [Internet]. [cited 2023 Feb 1]. Available from: https://worldpopulationreview.com/countries/sudan-population

10. Mappr. States of Sudan [Internet]. 2023. Available from: https://www.mappr.co/counties/states-of-sudan/

11. Source M open. Maps open source [Internet]. 2023. Available from: http://www.mapsopensource.com

12. Wadi E. Ethnic Conflict in Sudan: The Case of the Darfur Region. Journal of Cultural Studies. 2000 Jan 1;2.

13. Statista. Sudan: Total population from 2011 to 2021, by gender [Internet]. 2023. Available from: https://www.statista.com/statistics/967934/total-population-of-sudan-by-gender/

14. UNWOMEN. Gender-specific indicators [Internet]. Available from: https://data.unwomen.org/country/sudan

15. US Department of state. 2022 Report on International Religious Freedom: Sudan [Internet]. 2022. Available from: https://www.state.gov/reports/2022-report-on-international-religious-freedom/sudan/#:~:text=2020 Pew Research Center data,other religions or are unaffiliated.

16. Bureau of Statistics M of PH and UNICEF. Sudan Multiple Indicator Cluster Survey 2014, Final Report. Vol. 47, Bureau of Statistics, Ministry of Public Health and UNICEF. 2015.

17. United Nations. Security Council Extends Panel of Experts on Sudan, Unanimously Adopting Resolution 2620 (2022) [Internet]. 2022. Available from: https://press.un.org/en/2022/sc14791.doc.htm

18. Australia G. Sudan and South Sudan sanctions regimes. 2018.

19. Ottaway M, El-sadany M. Sudan: From Conflict to Conflict. The Carnegie Papers. 2012;(April):1–38.

20. World Bank. Sudan overview [Internet]. 2023. Available from: https://www.worldbank.org/en/country/sudan/overview

21. UNOCH. SUDAN Situation Report [Internet]. 2023. Available from: https://reports.unocha.org/en/country/sudan/

22. World Bank. GDP per capita (current US$) - Sudan [Internet]. Available from: https://data.worldbank.org/indicator/NY.GDP.PCAP.CD?locations=SD

23. Awad MM, Gaafar R. Health System Financing Review Report 2014. Pain Physician. 2014;3;17(3;5).

24. Wharton G, Ali OE, Khalil S, Yagoub H, Mossialos E. Rebuilding Sudan's health system: opportunities and challenges. The Lancet. 2020;395(10219):171–3.

25. Ebrahim EMA, Ghebrehiwot L, Abdalgfar T, Juni MH. Health Care System in Sudan: Review and Analysis of Strength, Weakness, Opportunity, and Threats (SWOT Analysis). Sudan Journal of Medical Sciences. 2017;12(3):133.

26. WHO. Country Cooperation Strategy for WHO and Sudan. World Health Organization. 2022. 56 p.

27. Directorate CH. Sudan Facility Based Assessment for Maternal and Child Health Commodities and Services. 2020;

28. Federal Ministry Health. The National Supply chain fund strategy for pharmaceutical and health product , Sudan Federal ministry of health. 2017.

29. Sayed SMA, Aabdin AM, Abo-Shanab MAA, Noma M. Prevalence of NCDS and Their Risk Factors in Khartoum State, Sudan. In 2019.

30. NHIF. National Health Insurance Fund (NHIF). 2022; Available from: https://nhif.gov.sd/about/

31. Awad Mousnad M. Pros and Cons of National Health Insurance Fund in Sudan: A Critical Review. Journal of Quality in Health Care & Economics. 2021;4(5).

32. PHI-FMoH. Health Finance Policy Options for Sudan. 2016;(March 2016):35.

33. Republic of Sudan Federal Ministry of health The National Strategy for Reproductive Health. NATIONAL REPRODUCTIVE HEALTH POLICY 2022-2030. Building. 2023;

34. Darrudi A, Khoonsari MHK, Tajvar M. Challenges to Achieving Universal Health Coverage Throughout the World: A Systematic Review. Journal of Preventive Medicine and Public Health. 2022;55(2):125–33.

35. Sudan's National Health Policy Outlines 2017 -2030.

36. Ali et al. Promoting access to high quality primary health care services in Sudan (policy brief). 2012.

37. Global Health Expenditure Database [Internet]. [cited 2023 Jun 2]. Available from: https://apps.who.int/nha/database/DocumentationCentre/Index/en

38. Directorate CH. Sudan Facility Based Assessment for Maternal Health Commodities and Services. 2017;(December).

39. WHO. Worldwide, an estimated 25 million unsafe abortions occur each year. WHO. 2017;

40. WHO. Adolescent pregnancy. WHO. 2022;

41. Division of Reproductive Health NC for CDP and HP. Centers for Disease Control and Prevention. 2021 [cited 2023 Feb 3]. Unintended Pregnancy Prevention | Unintended Pregnancy | Reproductive Health | CDC. Available from: https://www.cdc.gov/reproductivehealth/contraception/unintendedpregnancy/index.htm

42. Organización Mundial de la Salud. High Rates of Unintended Pregnancies Linked to Gaps in Family Planning Services: New WHO Study. World Health Organisation. 2019.

43. Fan S, Koski A. The health consequences of child marriage: a systematic review of the evidence. BMC Public Health. 2022;22(1):1–17.

44. Lancet. IMEI. 2022. The Lancet: 160 million women worldwide have unmet contraception needs; new study reveals large differences in types of contraceptives used across regions and age groups | Institute for Health Metrics and Evaluation. Available from: https://www.healthdata.org/news-release/lancet-160-million-women-worldwide-have-unmet-contraception-needs-new-study-reveals

45. Bellizzi S, Mannava P, Nagai M, Sobel HL. Reasons for discontinuation of contraception among women with a current unintended pregnancy in 36 low and middle-income countries. Contraception. 2020;101(1):26–33.

46. Ismail M. Regional disparities in the distribution of Sudan's health resources. Eastern Mediterranean Health Journal. 2020;26(9):1105–14.

47. Gabbad AA, Elbashir AH, Elawad MA. USE OF CONTRACEPTIVES AMONG WOMEN OF CHILDBEARING AGE AT ALAHFAD CENTER FOR FAMILY HEALTH , KHARTOUM , SUDAN The study addressed the women of childbearing age clients at Alahfad Center for Family. 2016;5(May):82–5.

48. Ali AAA, Okud A. Factors affecting unmet need for family planning in Eastern Sudan. BMC Public Health. 2011 Feb;13:102.

49. Ali AAA, Okud A. Factors affecting unmet need for family planning in Eastern Sudan 2013. Factors affecting unmet need for family planning in Eastern Sudan. 2013;13:5.

50. Majdi Mohammed Sabahelzain et al. Prevalence and factors associated with unintended pregnancy among married women in an urban and rural community, Khartoum state, Sudan. 2014;(October):2277–9604.

51. Donabedian A. The quality of care. How can it be assessed? JAMA. 1988 Sep;260(12):1743–8.

52. Bertrand JT, Magnani RJ, Rutenberg N. Evaluating Family Planning Programs with Adaptations for Reproductive Health. The Evaluation Project. 1996;1–105.

53. Satia J, Chauhan K. What is Quality? Quality of Care Frameworks. Improving Quality of Care in Family Planning: A Research and Advocacy Agenda for India. 2018;1–196.

54. Bruce J. Fundamental Elements of the Quality of Care: A Simple Framework. Stud Fam Plann. 1990;21(2):61.

55. FMoH-UNICEF. The road map for reducing maternal and newborn mortality. UNICEF. 2013;

56. ICPD. 2019. Sudan National Committments to ICPD25. Available from: https://www.nairobisummiticpd.org/commitment/sudan-national-committments-icpd25

57. The Sudan G of. Sudan: The Criminal Act 1991 [Internet]. Vol. 9, Arab Law Quarterly. 1992. p. 32. Available from: https://www.ilo.org/dyn/natlex/docs/ELECTRONIC/80450/118284/F-1325877900/SDN80450 Eng.pdf

58. UNDP-UNFPA. Sudan Gender Justice. 2018.

59. Tønnessen L, Al-Nagar S. The politicization of abortion and hippocratic disobedience in Islamist Sudan. Health Hum Rights. 2019;21(2):7–19.

60. Sudan National Committments to ICPD25 | Nairobi Summit [Internet]. [cited 2023 Jul 10]. Available from: https://www.nairobisummiticpd.org/commitment/sudan-national-committments-icpd25

61. FMoH. National Reproductive Health Commodity Security (RHCS) Strategy. Reprod Health. 2011;1–28.

62. MoFEP. Approved Budget for 2021. 2020;(December 2020). Available from: https://www.cabri-sbo.org/uploads/bia/Sudan_2021_Approval_External_EnactedBudget_MinFin_CEN-SADCOMESAIGAD_English.pdf

63. Charpentier L, Light B, Doedens W, Beattie A. Mid-Term Evaluation of the UNFPA Supplies Programme Volume 1 UNFPA Evaluation Office. 2018;1.

64. United Nations Population Fund. Executive Board of the United Nations Development Programme, the United Nations Population Fund and the United Nations Office for Project Services. 2012;41784(November 2020):1–11.

65. United Nations Population Fund. Executive Board of the United Nations Development Programme, the United Nations Population Fund and the United Nations Office for Project Services (2018 - 2021). 2017.

66. AbuAgla A, Yousif N, Elsheikh B. UNDERSTANDING THE LABOUR MARKET OF HUMAN RESOURCES FOR HEALTH IN SUDAN. 2013;(November):1–27.

67. Resources H, Observer H, No S. Health workforce requirements for universal health coverage and the Sustainable Development Goals. 2016;(17).

68. OCHA. HUMANITARIAN NEEDS OVERVIEW. 2022.

69. Yousif NA. Implications of internal and external Health Workforce Mobility on Health System Performance in Sudan. 2017;

70. Taha MH. Medical education in Sudan: A recommendation to adopt competency-based medical education curricula for improving practices (SudaniMEDs). Sudan Journal of Medical Sciences. 2019;(October):10–6.

71. UNFPA. Maternal Health : Stepping Up Efforts to Save Mothers ' Lives. UNFPA. 2013;

72. Mukasa B, Ali M, Farron M, Van de Weerdt R. Contraception supply chain challenges: a review of evidence from low- and middle-income countries. The European Journal of Contraception & Reproductive Health Care. 2017 Sep 3;22(5):384–90.

73. USAID/Africa Bureau. Three successful Sub-Saharan Africa family planning programs: lessons for meeting the MDGs. 2012;1–31. Available from: http://pdf.usaid.gov/pdf_docs/pa00hqsv.pdf

74. Fund MS. Nmsf Supply Chain Model : 2013.

75. World Health Organization (WHO). Assessment of Sudan's health information system 2020. 2020.

76. Williams CR, Britton LE, Bullington BW, Wambua DM, Onyango DO, Tumlinson K. Frequency and impact of long wait times for family planning in public-sector healthcare facilities in Western Kenya. Glob Health Action [Internet]. 2022;15(1). Available from: https://doi.org/10.1080/16549716.2022.2128305

77. Daff BM, Seck C, Belkhayat H, Sutton P. Informed push distribution of contraceptives in Senegal reduces stockouts and improves quality of family planning services. Glob Health Sci Pract. 2014 May;2(2):245–52.

78. Solo J. Reproductive Health Commodity Security : Leading from behind to forge a global movement. The Reproductive Health Supplies Coalition. 2011;28.

79. World Bank. Nurses and midwives (per 1,000 people) - Sudan. 2023.

80. Ali AA. Assessment of some factors associated with contraceptive pills usage among Sudanese ladies' users. Res Sq. 2023;1–12.

81. 2020 F. 2023. Modern Contraceptive methods. Available from: https://fp2030.org/sudan

82. Tessema GA, Gomersall JS, Mahmood MA, Laurence CO. Factors determining quality of care in family planning services in Africa: A systematic review of mixed evidence. PLoS One. 2016;11(11):1–23.

83. Mustafa MH, Mukhtar AM. Factors associated with antenatal and delivery care in Sudan: Analysis of the 2010 Sudan household survey. BMC Health Serv Res. 2015;15(1):1–9.

84. MSF. Sudan: Maternity care in rural North Darfur [Internet]. 2023. Available from: https://www.msf.org/sudan-maternity-care-rural-north-darfur

85. Kabakian-Khasholian T, Quezada-Yamamoto H, Ali A, Sahbani S, Afifi M, Rawaf S, et al. Integration of sexual and reproductive health services in the provision of primary health care in the Arab States: status and a way forward. Sex Reprod Health Matters. 2020;28(2):76–88.

86. El Shiekh B, van der Kwaak A. Factors influencing the utilization of maternal health care services by nomads in Sudan. Pastoralism. 2015;5(1).

87. MA M. Awareness of Sudanese Married Women among the Use of Hormonal Contraceptive. Journal of Quality in Health Care & Economics. 2020;3(5).

88. Bietsch K, Bietsch KE. Men ' s Attitudes T owards Contraception in Sub-Saharan Africa. 2015;19(September):41–54.

89. Gebreyesus A. Determinants of client satisfaction with family planning services in public health facilities of Jigjiga town, Eastern Ethiopia. BMC Health Serv Res. 2019;19(1):1–11.

90. Bintabara D, Ntwenya J, Maro II, Kibusi S, Gunda DW, Mpondo BCT. Client satisfaction with family planning services in the area of high unmet need: Evidence from Tanzania Service Provision Assessment Survey, 2014-2015. Reprod Health. 2018;15(1):1–9.

91. Oranu EO, Oppah IC. Assessment of Clients Satisfaction in Family Planning Service Delivery in Port Harcourt, Nigeria. J Biosci Med (Irvine). 2020;08(08):88–99.

92. WHO. A guide to family planning. Why use family planning. 2014;1.

93. Gabbad AA, Elbashir AH, Elawad MA. USE OF CONTRACEPTIVES AMONG WOMEN OF CHILDBEARING AGE AT ALAHFAD CENTER FOR FAMILY HEALTH , KHARTOUM , SUDAN The study addressed the women of childbearing age clients at Alahfad Center for Family. 2016;5(May):82–5.

94. Ontiri S, Kabue M, Biesma R, Stekelenburg J, Gichangi P. Assessing quality of family planning counseling and its determinants in Kenya: Analysis of health facility exit interviews. PLoS One. 2021;16(9 September):1–14.

95. Agbana RD, Michael TO, Ojo TF. Family planning method discontinuation among Nigerian women: Evidence from the Nigeria Demographic and Health Survey 2018. J Taibah Univ Med Sci. 2023;18(1):117–24.

Annex 1: Search strategy

	AND		
OR	Program Effort	Policy/Political Support	Middle East
	Contraceptive	Resource Allocation	East African countries
	Family Planning	Program Management/ Structure	Low-income country
	Elements in The Unit of Service Received	Choice of methods	Republic of Sudan
	Birth control	Information given clients	Sudan
	Impact	Technical competencies	Africa
		Interpersonal Relation	Sub-Sahara Africa SSA
		Follow-up/continuity mechanism	Worldwide
		appropriate Constellation of Service	
		Client Knowledge	
		Client Satisfaction	
		Client health	
		Contraceptive use and continuation	
		Family planning Commodity security	
		Human resource need and technical competency	
		Supply	
		Demand	