

Factors influencing access to and utilization of maternal health services in South Sudan.

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By

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Abstract

Background: South Sudan (SS), a fragile war-torn country, has one of the poorest health indicators worldwide. A combination of low utilization, limited access, and low coverage of maternal health services (MHS) contributes to a high maternal mortality ratio. This thesis aims to identify factors affecting maternal health services' access and utilization in SS.

Objective: to explore the factors influencing access to MHS and its utilization in SS, subsequently, suggest suitable recommendations to improve maternal health.

Method: scientific publications, peer-reviewed literature, and grey literature were reviewed. The findings are analysed using Andersen's Behavioural Model of Health Services.

Results: the study found that low access and utilization of MHS are mainly resulting from the country's insecurity, climate change, and health system related issues presented by poor quality of care due to insufficient staff, infrastructure, and equipment. Additionally, transportations costs, geographical accessibility, education, lack of autonomy, and cultural beliefs etc, contributed to the main issue. It emphasized the evidence-based interventions to improve MHS's access and utilization from SS and similar contexts, including community-based interventions, mobile health clinics, integration of traditional birth attendance, and maternity waiting home.

Conclusions and recommendations: health system problems and insecurity resulting from political instability and climate change are the most crucial factors leading to low uptake of MHS. Besides, addressing the factors leading to the issue is highly required to ensure an improvement of maternal health in SS. The study proposed effective recommendations in different aspect including policy, national, community, and health services levels to improve maternal health.

Keywords: maternal health, utilization, access, barrier, maternal health services, South Sudan.

Words count: 12362.

LIST OF ABBREVIATIONS AND ACRONYMS

SS	South Sudan
MHS	Maternal Health Services
GDP	Gross Domestic Product
NGOs	Non-Government Organizations
MOH	Minister Of Health
WHO	World Health Organization
SDGS	Sustainable Development Goals
MMR	Maternal Mortality Ratio
UN	United Nations
ANC	Antenatal Care
PNC	Postnatal Care
MHF	Maternal health facility
VU	Vrije Universiteit
UNICEF	United Nations Children’s Fund
NHP	National Health Planning
GBV	Gender-based Violence
DHS	Demographic and Health Surveys
UNPFA	United Nations Fund for Population Activities
FGM/C	Female Genital Mutilation /Cutting
LIC	Low-Income Country
PHCF	Primary Health Care Facility
EMOC	Emergency Obstetric Care
TBA	Traditional Birth Attendants
MWH	Maternity Waiting Home
CHW	Community Health Worker
HEW	Health Extension workers
CMNH	Community Maternal and Newborn Health
SBA	Skill Birth Attendance
MHC	Maternal Health Care
MOHSW	Ministry of Health and Social Welfare
SMI	Safe Motherhood Initiative
QOC	Quality Of Care
CBHC	Community-Based Health Care
BHS	Basic Health Services
SRHR	Sexual And Reproductive Health and Right
FP	Family Planning
PHC	Primary Health Care

Glossary

Utilization of health services:” Health Care Utilization is the quantification or description of the use of services by persons for the purpose of preventing and curing health problems, promoting maintenance of health and well-being, or obtaining information about one’s health status and prognosis”(1).

Healthcare access: “is the ability to obtain healthcare services such as prevention, diagnosis, treatment, and management of diseases, illness, disorders, and other health-impacting conditions”(2).

Maternal mortality: “The annual number of female deaths from any cause related to or aggravated by the pregnancy or its management (excluding accidental or incidental causes) during pregnancy and childbirth or within 42 days of termination of pregnancy, irrespective of the duration and site of the pregnancy”(3).

Skilled birth attendance: “skilled health personnel providing care during childbirth”(4).

Chapter 1: Introduction & Background:

1.1 Introduction:

Maternal health has been given considerable focus ever since the 1994 International Conference on Population and Development in Cairo, which aimed to accomplish universal access to reproductive health services, resulting in essential pledges for its worldwide enhancement (5). One of the international priority targets of the Sustainable Development Goals is to reduce maternal mortality to less than 70 per 100,000 live births between 2016 and 2030(6). Nevertheless, more than one in four new mothers and their babies still lack access to essential maternity care. Evidence suggests a correlation between improved maternal health outcomes and access to facility-based services from skilled birth attendants during pregnancy, delivery, and postpartum (7).

My professional journey as a medical doctor with a background in public health is firmly rooted in the quest to enhance maternal health services. After graduating from Taiz University, Yemen, I embarked on a rewarding career promoting the well-being of mothers and their infants. My passion for tackling this critical aspect of healthcare led me to focus on maternal health, particularly in regions facing significant challenges in accessing and delivering essential services. With a profound commitment to making a difference in the lives of mothers and infants, I approach this research with a sense of purpose and determination. I have chosen the Republic of South Sudan (SS) as the country of this thesis context due to its similarity with my homeland, Yemen. SS and Yemen are conflict-affected countries with poor maternal health indicators. I believe that the amalgamation of my personal academic background, professional experiences, and genuine passion for maternal health will guide this study toward generating meaningful insights and recommendations for advancing healthcare outcomes in the country.

In this thesis, we will first look at South Sudan's maternal health-related background. Furthermore, design an appropriate problem statement and justification to address the country's crucial maternal health issues. It extends to the methodology, then the result, which consists of two chapters according to objectives. After that, the discussion follows and closing with a conclusion and recommendations. This thesis aims to explore the factors affecting the utilization of maternal health services in SS and suggest evidence-based interventions and recommendations to the stakeholders to improve maternal health services in the area

1.2 Background:

1.2.1 Geographical:

The Republic of South Sudan is a landlocked country in Central Africa. The land spans is 644,330 km², making it the 18th largest country in Africa and the 42nd largest country in the world by area(8). SS gained independence from North Sudan on July 9, 2011, becoming the newest member of the world's nations (9). Direct international borders exist with the six neighbouring nations of Central Africa, the Democratic Republic of the Congo, Ethiopia, Kenya, Sudan, and Uganda(8). Among the 28 states in the country, the largest state is Juba, which serves as the new country's capital (10). Figure 1 Shows a map of SS.

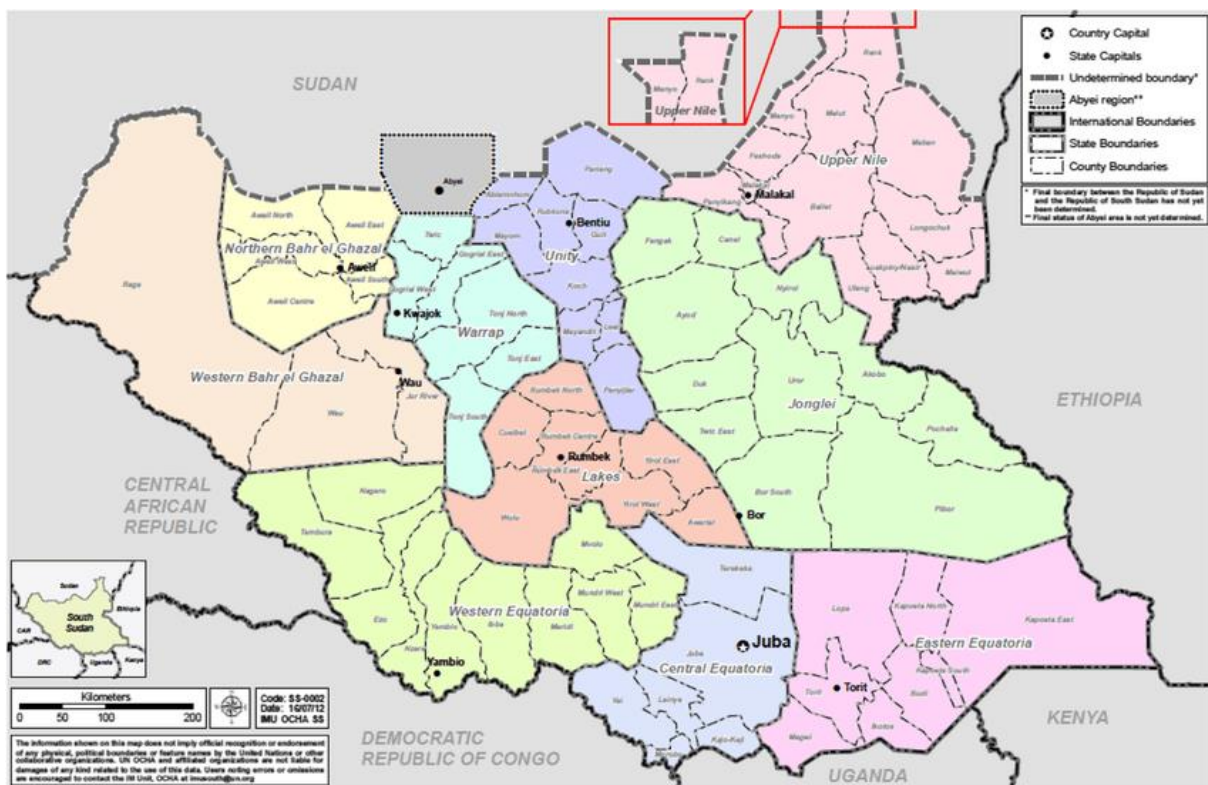


Figure 1 South Sudan Map(11).

1.2.2 Population:

In 2023, the total population of SS will be 11.1 million, according to the United Nations (UN). With 55 years of life expectancy for males and 58 for females (12). With total infertility of 2.06. Young people under thirty make up 70% of the population, one of the world's youngest populations, and 80% of all residents live in rural areas (13). For most people, agriculture continues to be their primary source of income. Up to 95% of South Sudanese people depend on farming, herding, or fishing as their primary source of income (13). About half of the people are part of the workforce, but each worker supports at least one dependent individual. South Sudanese families tend to be large, with an average of eight members. Nearly 70% of household leaders have not received formal education (14). Most of the population is Christian, followed by traditional believers, and then Muslims (15). Figure2 below shows number of females and males in given age group.

Population Pyramid

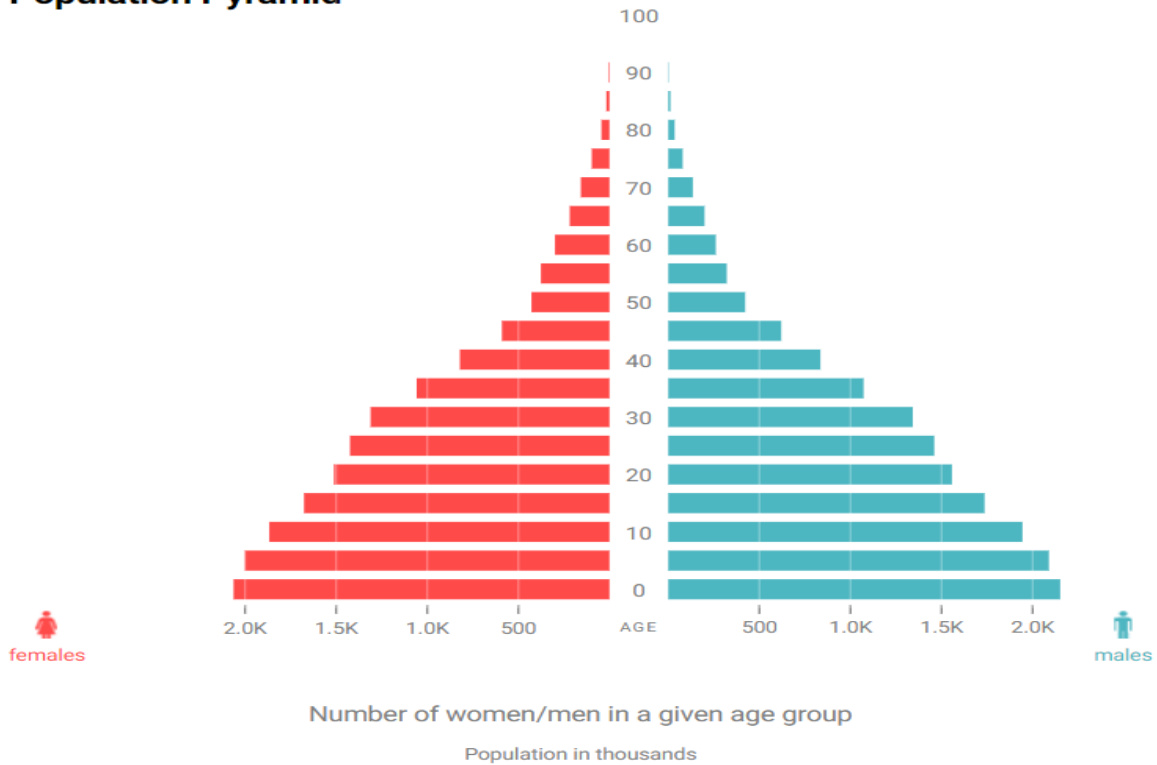


Figure 2 Population Pyramid (12)

1.2.3 Environment:

The vulnerability of SS to climate change and natural disasters exacerbates the humanitarian crisis there, jeopardizes relief efforts, and thwarts development initiatives. Since gaining its independence in 2011, the nation has experienced severe droughts and floods, which have led to numerous fatalities, displaced populations, and livestock losses that have negatively impacted people's ability to support themselves(16). Since 2019, unusually high flooding has been linked to several factors, including increased rainfall in SS, high water levels in neighbouring countries, and the absence of river system management(17). Seasonal flooding increases vulnerability and contributes to displacement, and the climate change makes rural communities more vulnerable. Even though conflict and insecurity remain the main causes of displacement due to decreased quantity and viability of cultivable land. Traditional seasonal migration routes taken by pastoralists and their livestock are impacted, and conflicts arise because of shifting water access and efforts to find grazing and water. Most of the population relies on agricultural productivity for their livelihood, which is decreasing because of the climate change effects(13).

1.2.4 Political:

South Sudan's civil war broke out in 1955 but subsided in 1972. It started again in 1983 and continued until 2005, when a peace agreement was signed allowing the South to decide whether it wanted to secede through a referendum. In contrast to the 4–5 million people displaced by this war, the UN estimates that 2 million people perished due to starvation, conflict, and illnesses (18). After gaining its independence, SS was controlled by a corrupt government known as a "kleptocracy. The system was militarized, meaning the military played a big part in politics. The government used most of the nation's income for patronage and political favours rather than public services and development. There were attempts to establish trustworthy institutions, but the system resisted significant changes, making it challenging to build a just and efficient government (19).

Furthermore, flooding and ongoing conflict and instability in SS have led to significant internal displacement, 80% of them are women (13)(20). The risks women and girls face while completing daily tasks to meet their basic needs are only made worse by flooding, reducing livelihood opportunities (such as gathering firewood and water). Along with the increased risk of kidnapping, murder, retaliation killings, and threats from the military, there have also been reports of sexual violence against women and girls (13). Traditional practices are at the heart of many conflicts between tribes, especially those involving pastoralist groups. However, military-style strategies and cutting-edge weapons are frequently used as these conflicts have developed. The ongoing violence has serious repercussions and is a significant barrier to achieving long-term, peaceful stability in SS. South Sudan ranked 159th out of 163 countries in the Global Peace Index 2022. SS is one of the least peaceful countries in the world and the least peaceful country in the region(21).

1.2.5 Education:

Literacy rates among the adult population are 27% (22). The Literacy rate is higher in males than females and is high among the 15- to 24-year-old age groups (23). Children's labour time interferes with their education and often keeps them from attending school. Most of the population needs help to read or write due to meagre school enrolment rates and inadequate government spending on education (14). According to UNICEF, more than 2.8 million children, or approximately 70%, do not attend school. Children in pastoral communities who travel with their cattle not in school, making it impossible for them to participate in regular classes. Most of South Sudan's uneducated children are female. Girls' access to education is hampered by poverty, child marriage, and cultural and religious beliefs (24).

1.2.6 Economic:

While SS has abundant natural resources, which include oil, minerals, forests, water, land, and biodiversity, which could result in economic transformation and diversification away from oil and other extractive resources, it is still one of the poorest countries in the world (25). It mainly depends on oil; with more than 90% of public revenue and 75% of the GDP (13). The South Sudanese government's short-term economic planning is primarily based on agreements regarding oil, loans, bilateral assistance, and donor investment(26). 3% of people in SS were unemployed, according to the World Bank in 2022. Out of all the men and women who are currently employed, 11% and 14%, respectively, are unemployed (27). For 78% of households, agriculture or raising livestock is the primary source of income (22). Land degradation, rising temperatures, frequent droughts and floods, erratic rainfall, and locust invasions are South Sudan's problems. Leading to decreased agricultural output, slowed GDP growth, and damaged livelihoods (25).

1.2.7 Health system:

South Sudan, a nation torn apart by war and conflict, has gradually rebuilt itself over the past ten years. With a high prevalence of communicable diseases and shortage of qualified medical personnel, the nation's healthcare system still needs to be developed (28). The health system is operated at the national, state, county, Payam, and boma levels (29). The Government and the international community have primarily focused on central government institutions in Juba while ignoring the decentralized levels (30).

Public health services are provided from the primary to the tertiary levels. Most of the health infrastructure has been destroyed, and essential equipment for surgery and medicine must be updated. The capacity for management and human resources has an inequitable distribution. Nearly 80% of health services are delivered by NGOs, making coordinating service delivery challenging (31)(32). All government-run medical facilities provide free medical care (33).

For the past five years, the national budget's allocations for the health sector have been below 2%, and the nation's total health spending is disproportionately dependent on development aid. The health infrastructure and service utilization indices are low at 43.2% and 15.05%, respectively, while the general service availability score is low overall at 30.4%. The current level of the health workforce is

well below what is needed to achieve universal health coverage. The disparate projects and disease-specific reporting systems drive the fragmentation of health information systems. Functions in the health sector are therefore dispersed and poorly coordinated (32).

Despite these obstacles, several sub-thematic strategies and guidelines are in place, along with general health sector policies and action plans. For the fiscal year 2021-2022, the health sector's budgetary allocation has increased to 7.9% of the national budget (32).

Implementing fundamental curative and preventive health services and the ensuing policies is moving slowly. The 2012 oil production halt, ongoing hostilities, the MoH's limited capacity for better stewardship, the absence of accountability, and Low human resource capacity at the MoH are upstream factors that could explain why the basic package of health services is being implemented slowly (34)(35).

Chapter 2: Problem statement, justification, and objectives:

2.1 Problem statement and justifications:

According to the WHO, “Maternal health refers to women’s health during pregnancy, childbirth, and the postnatal period”. Every stage of pregnancy should be pleasing for women and their children to ensure they reach the most significant goals for their well-being. Motherhood’s safety is an essential human right (36) Countries have come together to support the Sustainable Development Goals (SDG) targets to decrease maternal mortality by 2030. “Reducing the global MMR to less than 70 per 100,000 births, with no country having a maternal mortality rate of more than twice the global average,” is one of the significant objectives of the SDGs (37). The most recent statistics from the UN show that 800 women per day, or about one woman per two minutes, pass away from preventable conditions associated with pregnancy and childbirth. Most maternal deaths can be avoided with prompt intervention by qualified health professionals working in a supportive environment (36)(38).

There are excessively high rates of maternal mortality worldwide. The maternal mortality ratio (MMR, the number of maternal deaths per 100 000 live births) decreased by about 34% globally between 2000 and 2020. In 2020, there were approximately 287,000 deaths of women from maternal causes. As of 2020, low- and lower-middle-income countries accounted for nearly 95% of all maternal deaths. Around 87% (253000) of global maternal deaths occurred in Sub-Saharan Africa and Southern Asia in 2020. Roughly 70% of maternal deaths (202,000) occurred in Sub-Saharan Africa alone(37).

The Republic of South Sudan is a fragile, vulnerable, and conflict-affected country with one of the highest maternal mortality rates among developing nations (7)(39). One in seven pregnant women recently died in SS (39). Providing essential healthcare services has been made more difficult by an underdeveloped and underfunded health system and is heavily dependent on partners with low access to primary healthcare (39)(40). Evidence suggests beneficial correlations between utilizing and accessing high-quality and affordable MHS throughout pregnancy, delivery, and the post-delivery period through skilled birth attendance, leading to enhanced maternal health outcomes (41). South Sudan indicators show limited access to health services, low utilization, low coverage and high inequities of maternal health services (MHS) (42)(43)(44),

A high percentage of home deliveries (87%) and only 19% of births were attended by trained medical personnel. Only 40% of health facilities are operational, and international organizations still make up most of the service providers for emergency obstetric care; however, there have been numerous reports of complications during labour and delivery at facilities. Several factors contribute to the poor health indicators (45). According to routine data gathered by the MoH in the county, 54.8% of pregnant women received some form of ANC in 2014, 11.3% attended four or more ANC visits, and only 1.7% gave birth in medical facilities(34).

The physical environment, social and economic factors, and unique characteristics and behaviours of the individual woman increased the lifetime risk of maternal mortality. Understanding the factors that contribute to low use of maternal and child health services is crucial for preventing maternal mortality in South Sudan following pregnancy, delivery, and postpartum(42). Various factors impact the general accessibility and use of maternal healthcare facilities (MHFs). Identifying the barriers to maternal health accessibility and utilization in South Sudan could help policymakers take the necessary steps towards appropriate and equitable healthcare (46). Considering the United Nations’ commitment to achieving the goals by 2030, there is a dedicated focus on enhancing equitable healthcare access and reducing maternal mortality rates. This thesis aims to identify the factors influencing access and utilization of MHS to come up with interventions to improve maternal health in South Sudan.

2.2 Objectives:

2.2.1 General objective:

To explore the factors influencing access and utilization of maternal health services in South Sudan to share findings and recommendations for effective strategies and evidence-based intervention with policymakers, NGOs, the private and public health sectors, and health professionals to improve maternal health in South Sudan.

2.2.2 Specific objectives:

1. To describe the maternal health status, harmful practices, and use of maternal health services in South Sudan.
2. To describe individual and socio-culture factors, enabling factors, and need factors that affect the access and utilization of maternal health services.
3. To describe the external environmental and health system factors that influence access and utilization of maternal health services.
4. To review evidence-based interventions for safe motherhood in South Sudan and other countries in similar contexts.
5. To share findings and recommendations for effective strategies and evidence-based intervention with policymakers, NGOs, private and public health sectors, and health professionals to improve maternal health.

Chapter 3: Methodology:

3.1 Search strategy:

This thesis is a literature review. The literature review was carried out through Google Scholar, PubMed, the VU library database, and global agencies like WHO, UNICEF, the World Bank, and UNFPA. In addition, national policies, surveys, national bureau of statistics for South Sudan, Ministry of Health, and the author also used reports to get more information and data. Moreover, snowballing technique is used to find relevant literatures.

Keywords: maternal health, maternal services, maternal mortality, factors affecting maternal health, access, South Sudan, sub-Saharan Africa, cultural, emergency obstetric, distance, health system, skilled birth attendance, utilization of health services, transportation, quality, antenatal care (ANC), access to maternal services ... To accomplish the study's goals, these words were searched individually and in combination using logic connectors (OR/AND). There are more keywords in Annex 1.

The following search **inclusion criteria** were used to choose studies that include grey and peer-reviewed, systemic review, qualitative, and quantitative, and mixed studies which published between 2010 and 2023. English was the primary language used for searching.

3.2 Conceptual framework:

Anderson's framework of health-seeking behaviour

The main objective of this framework is to delineate the factors that influence the ease of accessing and utilizing health services or, conversely, create barriers to access. Anderson developed this framework in the 1960s, and it has undergone four phases of evolution since then. The latest phase, the fourth one, was formulated in the 1990s. It illustrates the external environment with predisposing, enabling, and need factors. Additionally, the framework highlights how these various factors and practices collectively impact health outcomes(47).

After reviewing the 3 Delays Model and Levesque's framework, the author selected this specific framework due to its aptness in addressing the research objectives. This chosen framework encompasses a comprehensive set of individual characteristics significantly impacting healthcare utilization and pertinent external factors relevant to the research context. Anderson's model focuses on a socio-demographic analysis of the use of health services. This model was picked for this thesis in consideration of the objectives and the present related literature reviews. Moreover, as previously explained, the framework incorporates the core three dimensions and external factors about the healthcare system, and the implications of external environment on healthcare utilization were included. The following three factors primarily influence how someone accesses and utilize health services:

1-Predisposing Factors: These elements encompass socio-cultural attributes of the healthcare recipient that exist before utilizing health services and before the onset of illness. Classified as "Demand-side Factors," they include education level, gender, age, social interactions, and cultural beliefs. These factors play a significant role in shaping an individual's predisposition toward seeking healthcare.

2-Enabling Factors: These factors influencing the individual's capacity to seeking healthcare services effectively. They encompass various aspects, including the individual's ability to pay (income), health services and personnel availability, waiting times, transportation options, and knowledge of potential health services. Notably, these factors can act as demand and supply factors.

3-Needs Factors: These factors are founded on two key components. Firstly, Perceived Needs entail how individuals perceive their overall health and functional condition, including their experience of symptoms, pain, and concerns about their well-being. This perception influences their decision to seek professional healthcare assistance, depending on their judgment of the significance and severity of their health issues(47).

Secondly, evaluated needs represent the professional assessment of individuals' health status and their actual requirements for medical care. It involves the healthcare provider's expert judgment regarding the necessary level of care based on the individual's health condition.

The environmental factors include health system factors and external environmental factors.

Moreover, personal health practices, encompassing an individual's health-related behaviours, interact with the above factors and contribute to health outcomes. In this framework, health outcomes are not solely dependent on service utilization but are also influenced by the individual's health practices and behaviours(47). Figure 3: Shows Anderson’s framework of health-seeking behaviour.

As the main scope of this study focuses on factors influencing access and utilization of the MHS, the outcome domain in this study will not cover.

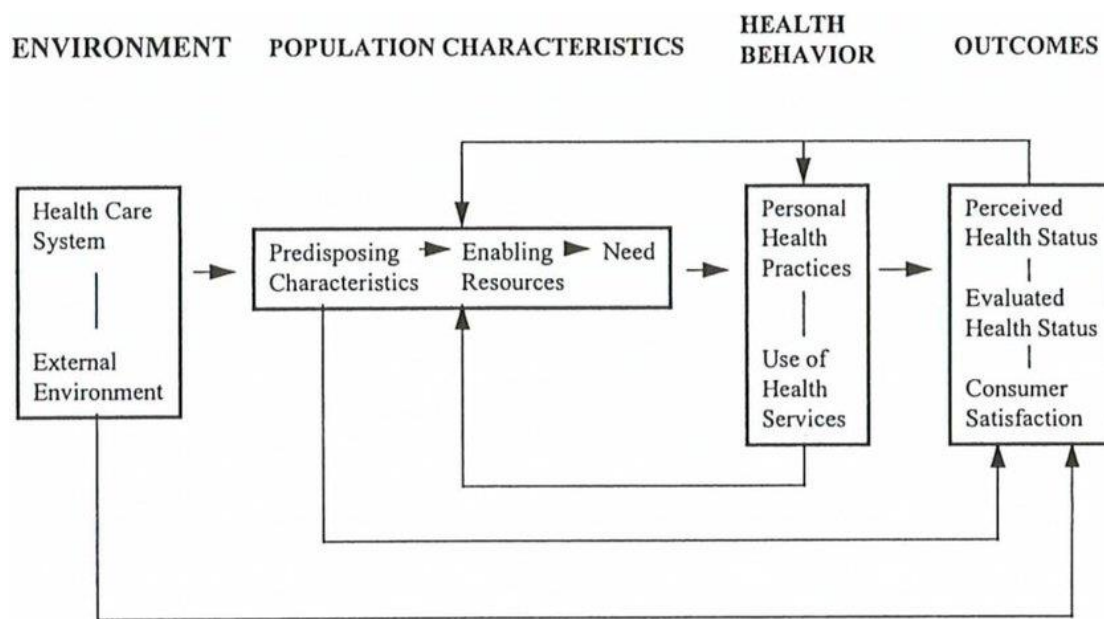


Figure 3 Anderson’s framework of health-seeking behaviour (48).

3.3 Study limitations:

There are very few studies done to examine various factors that affect the delivery of health services across the country, as it is a new country with an underdeveloped healthcare system. English-language articles were considered, while there may be scientific papers published in other languages. Most of the literature reviewed was located online; Hard copies could not be accessed. The author used grey literature from international organizations. The data system is quantitatively and qualitatively weak.

Chapter4: Results

4.1 Section1: Maternal health and health practice and behaviours:

4.1.1 Maternal health status:

South Sudan is a fragile nation with some of the world's worst social indicators, especially for women and girls (49). According to the World Bank, SS had 1,223 women per 100,000 live births in 2020 due to childbirth-related causes. The maternal mortality ratio decreased from 1,687 in 2000 to 1,223 in 2020. SS has highest maternal mortality rates worldwide (50). Figure 4 below shows the MMR trend over 20 years, according to the UN which illustrates how the MMR decreased from 2000 to 2012. However, the MMR increased following the independence of SS.

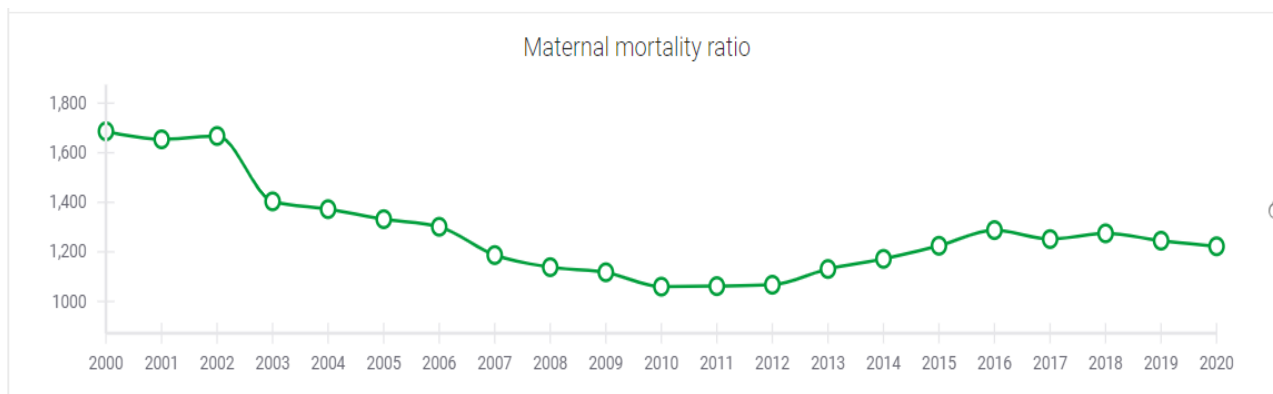


Figure 4 maternal mortality trend (51).

The direct and common causes of maternal death in SS are haemorrhage, hypertensive disorders, sepsis (infection), eclampsia, unsafe abortion, and prolonged or obstructed labour. In contrast, indirect causes include HIV/AIDS, malaria, hepatitis, anaemia, and heart conditions. One of Sub-Saharan Africa's regions with the highest malaria burden is SS, which is one of the main factors contributing to South Sudan's high maternal mortality rates (MMR) (52).

The government created the SS Development Plan 2011–2013, prioritizing access to quality essential health services. The National Health Policy 2016–2026 builds on previous policies' successes, recognizes their weaknesses, and adapts to the health sector's new post-independence facts. The last NHP prioritizes maternal and neonatal health, as the statistics show that the population of SS is in poor health regarding maternal and neonatal mortality. It concerted the efforts to enhance the provision of health services, better manage the resources available to the health system, and strengthen collaborations between the public and private sectors in the health field. One of the specific objectives is "Ensure reduction of maternal and neonatal mortalities and morbidities through effective delivery of maternal, sexual and reproductive health services and rights with particular attention to vulnerable population groups" (53). Pregnant women, newborns, children, and adolescents are the focus of numerous policies and healthcare strategic plans, demonstrating the MoH's political commitment to improving their health. The weaknesses found in the various components that make up the health system are primarily to blame for the gap in policy implementation. The primary identified bottlenecks are a critical lack of human resources across the components and levels of the health system, a shortage of medications and supplies, and low national funding. Poor governance, a lack of accountability, and inadequate human resource capacity are the upstream factors that explain these bottlenecks. These factors have combined to produce poor-quality services and low utilization of maternal and child health services (35).

4.1.2 Harmful practices:

Child marriage is expected in the South Sudanese post-conflict environment, where severe humanitarian needs accompany ongoing violence. According to Adolescent Girls in Crisis, child marriage is the most commonly reported illustration of gender-based violence experienced by girls in SS (54). It implies that

parents and male siblings are responsible for making decisions on behalf of girls, “including getting them married without their consent” and that girls have little decision-making power (55). In SS, 52% of girls marry before turning 18, and 9% do so before turning 15. The UNICEF findings indicate that SS is the seventh-highest country globally, with a high rate of child marriage (56). Conflict and child marriage are linked by the increased economic pressure and safety concerns that force families to wed off their daughters (54).

Several consequences of child marriage, such as lack of participation in decisions about pregnancy and access to healthcare, adolescent pregnancy, poor maternal health outcomes, child mortality and morbidity, and unequal power dynamics, may result in intimate partner violence. Adolescent pregnancy and child marriage have repercussions, including decreased participation in economic development. Married girls may have poor educational outcomes or drop out of school. Additionally, young married women have less access to healthcare(54)(56).

Due to early marriage, South Sudan's average life expectancy for women is low. Furthermore, these behaviours also impact girls' education and societal socioeconomic advancement (56). According to UNICEF, in SS, more than 2.8 million children, or more than 70%, do not attend school, endangering their futures and that of the nation. Most of South Sudan's uneducated children are female. Girls' access to education is hampered by poverty, child marriage, and cultural and religious beliefs(24).

According to a study analysis of Demographic and Health Surveys (DHS) of 28 sub-Saharan African countries, the likelihood of young women using maternal healthcare services decreased after experiencing child marriage, which is ANC, PNC, and delivery by skilled birth attendance (57). Also, a study in SS shows that young pregnant women have less use of MHS (7).

The UNPFA estimated in 2015 that nearly 32,000 women in SS had experienced gender-based violence in the two years since the conflict began. This estimate considered victims of female genital mutilation/cutting (FGM/C), child marriage, and sexual and physical abuse. There are no recent surveys about the prevalence of FGM/C. FGM/C cases have been reported by both Christian and Muslim communities, mainly in the northern regions (58). The practices that involve harm to the female genital organs, such as removing the external female genitalia entirely or partly for non-medical reasons, are referred to as FGM (59). A study of six African countries shows that women with FGM gave a negative obstetric outcome than women without, and the risk increased with an extensive type of FGM (60). In addition to causing severe bleeding, urination issues, cysts, infections, labour complications, and complications during childbirth, the practice has no positive effects on girls' or women's health (59).

4.1.3 Use of maternal health services:

The Safe Motherhood Campaign began in 1987; half a million women, most of whom live in developing nations, still lose their childbirth-related lives annually. Pregnancy-related deaths among women can be largely avoided with the help of essential healthcare interventions. Maternal health is improved by ANC attendance, delivery in a medical setting, and having a qualified health worker present. However, these interventions are rarely used in developing nations (61).

According to the UN Cooperation Framework Report 2020, in SS, only 19% of births were attended by trained medical personnel, and 87% of deliveries were at home. Only 40% of health facilities are functional, and international organizations provide most emergency obstetric care. There are severe shortages of essential reproductive health commodities, including critical maternal and newborn survival drugs. In SS, there is one doctor per 65,574 people and one midwife per 39,088 people, as well as severe capacity gaps in human resources for health (49).

During pregnancy, UNICEF and WHO advise at least four antenatal care visits. And according to the last South Sudan household survey, 17% of women went to four or more ANCs during pregnancy. In comparison, 54% of women did not receive antenatal care, 84% received two visits, and 11% received three ANCs. The findings reveal significant variations across states, residence places, education levels, and economic status. In urban areas, 26% of women had four or more ANC visits, compared to 14% in rural areas. 5% of women in the poorest households reported having four or more antenatal visits,

compared to 35% in the wealthiest families. Compared to 47% of women with secondary and higher education, only 13% of women without any education have had four or more visits (62).

The immediate postpartum period and labour and delivery account for 75% of all maternal deaths worldwide. Ensuring a qualified health professional with midwifery skills is present at every birth and that transportation is available to a referral facility for obstetric care in an emergency is the most critical intervention for safe motherhood (62)(63).

In SS, only 11% of births occur in medical facilities; 3% occur in primary health care facilities (PHCF); 65% are assisted by skilled personnel; 9% occur in hospitals; and skilled birth attendants assist 89%. Eight out of ten deliveries happen at home, and only 12% of home deliveries receive qualified assistance. Locations of delivery and getting help by skilled birth attendance differ regarding place of residence, education, and socioeconomic status. Women who live in rural areas, have low education or are from poor households tend to deliver at home without skilled birth attendance (62).

Regarding family planning, One of the worst conditions for reproductive health exists in SS, with a contraceptive prevalence rate of 4.7% due to social norms related to marriage, childbearing, and lack of autonomy (64).

4.2 Section 2: factors influencing utilization of maternal health services:

This section will analysis the factors that affecting utilization of maternal health services according to the conceptual framework.

4.2.1 External factors:

4.2.1.1 External environment

4.2.1.1.1 Insecurity:

Insecurity brought on by South Sudan's ongoing civil unrest has prevented the development of essential infrastructure. Mothers are less likely to use services due to insecurity, especially at night (65). Insecurity was reported as a barrier in systemic review in African countries to accessing maternal health services, especially in SS. People living in fragile settings were in constant fear and displacement, searching for safety (46). Reaching health facilities was almost impossible as they could be targeted and killed (66). A study reported that women fear leaving their children alone and visiting the facility. Another study conducted in SS shows that women do not go to ANC because they fear insecurity, and they reported if a health facility was close by, they would go and be able to return home quickly (34). Moreover, conflict leads to the destruction of health facilities, which is considered a barrier to utilizing health care (67).

4.2.1.1.2 Climate change:

As a primary effect of climate change influencing health outcomes, exposure to flooding disrupt access to and operation of health services and facilities (68). South Sudan's vulnerability to natural disasters and climate change exacerbates the humanitarian crisis. Since gaining its independence, it has experienced severe floods and droughts, adversely affecting people's ability to support themselves. Flooding and localized drought hampered access to education, water, sanitation, hygiene, and health services(32)(46). A study in SS reported floods and mud during the rainy season, being unable to swim, sections of roads being washed away, and bumpy roads that made it more likely for women to experience excessive trembling when travelling by car or motorbike, which leads to delivery at home rather than going to health facilities (7). Other studies connect the physical accessibility to MHS to flood in terms of transport to reach health facilities seeking MHS as the women report that they could not go to the health facility; thus, the flood during rainy seasons makes it difficult to access the health facility. Furthermore, flooding made it impossible to deliver medicines and supplies to hospitals, thus reducing the supply (34)(66). Another study reported that lack of transportation in the rainy season prevents women's access to emergency obstetric care (EmOC), leading to home delivery and exposing them to unskilled birth attendance (69).

Moreover, as highlighted in the background, most people in SS depend on farming as their income, while flooding distracts the crop, and they lose their source of income. People lose their source of income to afford health care in terms of the indirect cost of transportation (34)(70).

Flooding affects access to essential services and means of subsistence in schools, homes, hospitals, and water sources. For instance, flooding in November 2021 in Unity State alone affected over 100 schools, preventing over 60,000 students from attending class. The population affected by floods suffers an immediate increased risk of disease and longer-term effects from the loss of education(71). Education is one of the factors that affect the utilization of MHS will be discussed later in 4.2.2.1.

4.2.1.2 Health system factors:

As highlighted in the background 1.2.7, South Sudan's health system is under development, and there is a shortage of health workers, infrastructure, essential equipment, and medicines, as well as limited access to and utilization of health services. A significant shortage of medical professionals has restricted the provision of high-quality MHS. The lack of midwives and doctors exacerbated shortages in skilled delivery and immediate postnatal care(PNC) (72).

A thorough systemic review was done to investigate the barrier to accessing MHS in African Countries and found that maternity wards in SS were reported to have insufficient bed capacity and private birth spaces. Women in SS have also complained about the lack of well-equipped birthing clinics and necessary medication in some primary healthcare facilities (46). Another study in SS reported that the lack of health facilities providing MHS for nomadic who travel to search for water and food is a barrier to accessing healthcare (34). Moreover, another qualitative study held in SS reported that the health facilities lacked necessary supplies like medicines. The mothers' perceptions of the medication shortage were the most prevalent and linked to their dissatisfaction with the use of ANC services. It also mentioned the long waiting time due to a lack of staff which is seen as a barrier to receiving maternal healthcare. Women also saw the waiting area's seating and lack of space as obstacles. They had to hold their infants while standing (7).

Local health centre administrators had to release patients early due to insufficient beds. The barrier of releasing women from the neighbourhood hospital after two hours of delivery was connected to complications like postpartum haemorrhage and death. In terms of quality of service, lack of staff, equipment such as beds, and long waiting times, a study revealed the inadequate quality of maternal healthcare as a significant constraint for accessing and utilizing public healthcare. The quality of public facilities has been criticized for being poor, inconvenient, and run by unqualified healthcare professionals (7).

From another perspective, healthcare workers reported factors such as low motivation and insufficient training, affecting the quality of care provided. This demotivated the women from accessing those services (65). The health system's inability to promptly address women's needs also demoralized them (7).

Additionally, the scarcity of resources such as staff and equipment is due to a single health facility serving a large geographical area, and the transport difficulties in the rainy season are considered a major obstacle to health facilities supply (73).

4.2.2 Characteristic factors:

4.2.2.1 Education:

Evidence indicates that maternal education significantly influences the utilization of health services in Africa(74). Regarding accessibility and utilization of the recommended number of ANC visits, a study found that illiterate mothers had the worst maternal health outcomes compared to educated women. Illiterate women are also less likely to seek ANC because they lack the necessary information to use healthcare resources that effectively provide better MHS. It also showed that the education level of the women was a risk factor to non-use of ANC services, with greater use of services as the women's education levels increased(75). Another study is ongoing in SS regarding PNC services, which can significantly lower fatalities by detecting early maternal and newborn danger signs. The study reported that the ability to act concerning health and disease is increased by maternal education. As a result,

mothers with formal education have more control over the factors that affect health than mothers who are illiterate or poorly educated. It was also reported that mothers who received information on PNC visits after delivery used EPNC more frequently (63). Other studies reported that mothers with at least a primary education have a greater awareness of obstetric danger signs, four or more ANC visits, and the prevalence of delivery with an SBA is significantly higher among them. Because they had higher knowledge levels and education indirectly affected other factors like income, which enabled them to use MHS (67)(65). In a qualitative study finding in SS, health workers reported that pregnant women are unaware of the advantages of using maternal care because a lack of health awareness is a barrier to using MHS (7). All of these demonstrate the importance of health education in promoting and maintaining the use of healthcare.

4.2.2.2 Gender:

Women from LICs in Africa shared great responsibility for maintaining their homes, caring for their children, and assisting their husbands with farming during harvest seasons, particularly in pastoralist populations and cattle camp communities in SS (34). Evidence suggests that women could not leave their homes and domestic duties to travel far to medical facilities for ANC, childbirth, or PNC visits, especially when no other family member could look after their other children (46). Another study showed a list of the responsibilities of men and women in Rumbek North. Women looked after the kids, maintained the home, and provided and cooked for the family. Domestic chores significantly increased when women had to work on their farms and care for their families. Household chores were made worse by the distance to health facilities and the need for more security. All these responsibilities for women build a barrier to seeking MHS (34).

Seeking MHS is significantly influenced by the partners of pregnant women. Men typically did not want to pay the bill for visits to MHF because they controlled the family's finances (34).

4.2.2.3 Culture and beliefs:

Spiritual and traditional leaders treated various maternal health conditions relating to pregnancy and childbirth, most frequently using spells and medicinal roots (72)(69). Same in South Sudan as many herbs are grown and used traditionally to treat many conditions(76).

A study reported that traditions and beliefs influence maternal healthcare services. Some women in SS preferred to give birth at home and were reluctant to attend ANC (46). Another study in SS found that the location of childbirth was influenced by tradition and culture. Women preferred to give birth at home with nearby assistance to ensure that the placenta was handled in accordance with culture (66). In this setting, tradition and culture substantially impacted institutional childbirth, but they appeared to have less of an impact on ANC attendance (34). A qualitative study in SS showed that both men and women believed there was no need to visit medical facilities for childbirth because their grandparents had delivered at home without any medical assistance. Sociocultural factors that deter mothers from seeking medical care during childbirth include fear of dignity violation as a delivery position and removing the clothes. Also, the husband decides on the delivery location. Men do not allow their wives to give birth in a hospital; the women worry about domestic violence if they disobey their husbands. Only in cases of complications they allow for institutional delivery (66).

Due to their traditional, cultural, and social roles as carers for children and the elderly, female-headed households, which are frequently found in rural areas(13), women are responsible for looking after their children, a study in SS reported no one could look after their kids and that the women could not leave their kids, which prevented them from visiting HF's (34).

4.2.2.4 Autonomy:

There are concerns about women's lack of autonomy in decision-making in SS (7). Women's reproductive choices are generally minimal, and they frequently experience unintended pregnancies. Because it was a national duty during the war, they were under intense pressure to have children. South Sudanese women are trapped in a vicious cycle where high child mortality and high fertility increase the risk of morbidity and mortality (77). The obstacles to using MHS in the country include power structures favouring men, the domestic responsibilities that society places on women based on tradition and culture, and women's lack of decision-making autonomy. A study showed that male partners had

disproportionate power over where women gave birth. The husband always decides where the baby will be born, and many men do not allow their partners to give birth in hospitals without an apparent obstetrical complication (66).

4.2.2.5 Age:

According to UNICEF, almost half of the population in SS is below 20 years of age (78). As mentioned, the fertility rate is high in SS; by 19 years old, one in three girls are already married or living with partners, and the same percentage of them have already begun having children, according to the country's national family planning policy document (79). Child marriage is a common practice in SS that leads to adolescent childbearing (80). Younger women were found to have a higher percentage of unintended pregnancies linked to a lack of access to maternal health services, delayed ANC, and higher maternal mortality rates (81). There is evidence, LMIC adolescents utilize MHS less than older women due to financial and educational factors (82). A study in SS reported that adolescents have a barrier to utilizing MHS because they have less support from their partners(7).

4.2.2.6 Polygamy:

Polygamy is one of the determinants of whether to seek medical care or not (67). 41% of marriages in SS are polygamous; it has a high rate of polygamy as it is a pervasive practice (83). A study conducted in SS found that women whose husbands had more than one wife had a high risk of not using ANC services. For women to use ANC, their husbands must be supportive. When a woman is married to more than one woman, the husband's attention is split between the women, which means that he has less time to attend to the needs of each wife (75).

4.2.2.7 Marital status:

A study conducted in SS showed that the stigma of unmarried teenage pregnancy is a barrier to using MHS. The study reported that single pregnant women tend not to use maternal health services compared to those who have husbands in terms of support to utilize MHS (7).

4.2.3 Enabling factors:

4.2.3.1 Geographical accessibility:

Long travel times to medical facilities are a significant obstacle to institutional childbirth(7)(46). Only one in four people can walk for one hour to the nearest medical facility in SS(83). In addition to the location of health facilities' lack of means without a reliable mode of transportation, it is challenging to reach a medical facility (34)(46). The weather makes travel more difficult. Rainy seasons as mentioned above can cause roads to flood, which evidence indicated hindered women from requesting maternity care in a facility (69). In a study, the residents of cattle camps and pastoralists in SS reported that accessibility to medical facilities was significantly hampered by distance. Farmers and pastoralists frequently live in constant movement; farming and raising livestock are commonplace activities. The extensive distances they reported and nomadic women who had to travel to receive ANC or give birth in a medical facility presented a challenge (46). Also, displacement worsens geographical accessibility through insecurity due to the conflict(66). Regarding residue location, as most South Sudanese people live in rural areas, one study shows that ANC services were less frequently used by pregnant women from rural areas than those from urban areas due to the distance to health facilities(75). In remote, dispersed villages, less than half of pregnant women have access to pregnancy care(69). The household survey reported that the women spend more than two days accessing the health facility, which means the long distance between women's homes and health facilities(62). Most studies reported transportation-related barriers to seeking MHS (7)(34)(65)(46)(63)(69).

4.2.3.2 Income:

One of the enabling factors affecting how often people use health services is their personal and family income. The availability of financial resources affects people's capacity to utilize healthcare. Income, occupation, and employment are examples of resources that can be provide the necessary financial resources (84). As mentioned above, SS is a poor country, and over 50% of the country's population lives in poverty due to prolonged conflict (7)(83). Evidence shows that services are typically less accessible to people in poor countries (85). The direct and indirect costs frequently hampered access to maternal healthcare. Even though ANC was free at the point of use in SS, women complained about the

high cost of institutional delivery (46). A study conducted in SS reported that financial restrictions resulted in limited ANC visits because most of the families were impacted by the financial crises in the nation. Men reported that a family's inability to pay for transport and medical expenses, reduced income, and irregular salary payments were the main factors contributing to home births (7). Most of studies report that inability to pay for healthcare was the leading cause of the non-use of maternal services either for transport, which is mainly reported, and for user fees (7)(34)(63)(66)(69). The financial barrier mainly interacts with transportation, which is related to the location of health facilities, and the other enabling factor (69). Furthermore, in a study, men reported that user fees were to blame for women's access to care being delayed when they suffered complications during labour or after delivery, such as prolonged bleeding. To treat their wife's complications, men financially in charge of the family had to pay for transportation, specialists, and medications. In the event of complications, patients would be referred to higher levels of care because the medical centre was thought to have a limited capacity for treatment. This made men's financial burdens greater and prevented utilization (7).

Another study reported that the women worried they might not be allowed to go home if they did not have enough cash to cover the hospital expenses. So they go to TBA because they are flexible in payment (86).

4.2.3.3 Family support:

A study in SS showed significant emphasis on the husband's support and that of other family members or neighbours to seek MHS; however, some people may not have access to these support networks. Due to their lack of support, single women and adolescents had more difficulty obtaining services during pregnancy. The study reported that men prevented their partners from attending ANC, they were not offered emotional support or encouragement, and not being concerned about maternal health. Men believe attending ANC is unnecessary because their mothers never do it (34). Another study in SS proved that lack of support from the husband considers a barrier to accessing and utilizing MHS (7).

4.2.4 Perceived need and evaluated need:

Although predisposing and enabling factors may encourage or discourage the use of services, people must perceive their illness to seek medical care. The perceived need determines individuals' and families' perceptions of illness and the likelihood of seeking medical advice. In addition to the degree of health awareness, community culture and personal beliefs also impact the perceived need (47).

While the clinical diagnosis of the illness' severity and the actual symptoms are considered in evaluating the illness, a health professional assesses the need being evaluated (47).

A study in Gogrial West, SS, reported that despite some women perceived needs to attend the MHF, they must first convince their husbands at home that they need medical care (83). A qualitative study in North the county found that ANC was seen as an unusual concept. Some women had never been to a medical facility, and the population had long lived without formal healthcare services. As a result, some women were unaware of ANC and its importance. Additionally, some women who experienced pregnancy-related issues turned to traditional remedies because they were unaware of the available medical care in hospitals. Some women who had never experienced a pregnancy-related complication before did not recognize the benefits of attending ANC, given the significant obstacles to receiving services. Similarly, those who experienced health issues did not consider them a severe threat to the pregnancy(34).

Two studies have proven the association between the perception of benefit and need for MHS, quality of care in terms of infrastructure, staff, waiting time, and access to MHS in SS. The studies reported that participants perceived pregnancy as a routine life event that does not require seeing a health professional unless there is a problem (34)(66).

As a result, most participants linked ANC with managing illnesses during pregnancy. The perception that ANC is a curative rather than a preventive health service may lead to sporadic utilization, which is influenced by the perceived seriousness of pregnancy-related health issues. The same perception determined the criteria women used to assess the quality of care they received. Because most women received ANC at PHCUs and these medical facilities only kept noninjectable medications on hand per

government regulations, the medical care received was considered insufficient and a waste of time (34). Regarding delivery at home, the second study found that both men and women believed that since their grandparents delivered without any issues, there was no need to visit a medical facility for childbirth(66).

The clinical diagnosis of the illness' severity and the actual symptoms are what are considered in the evaluation of the illness. A health professional assesses the need that is being evaluated. the following elements determine the evaluated need: Irrespective of staff behaviour, low self-esteem, and lack of assertiveness on the part of the user, the stigma associated with health conditions, staff availability and stereotype, and working hours in health facilities(47). There is not study found in SS related to evaluate the need.

Chapter 5: Evidence-based interventions:

This chapter will provide evidence-based strategies for increasing access and utilization of MHS.

5.1 Maternity waiting home:

A maternity waiting home is a place that offers EmOC along with ANC and is conveniently located near a hospital or health centre. Additionally, the facility may offer women health education about pregnancy, childbirth, and infant care(87). It is designed to expand access to specialized prenatal care in settings with limited resources(88).

The remote populations may not have access to private or frequent, dependable, and reasonably priced public transportation. Access to healthcare was made more difficult by some populations' restrictions on women's travel based on gender, as mentioned above. Numerous interventions worldwide adopted to remove physical access obstacles and offer care suitable for each patient's culture. Maternity waiting home (MWH) intervention move pregnant women from particularly remote areas to wait for birth close to a maternity unit(89). Even though maternity waiting homes seem like an easy, affordable intervention(90), most women who are encouraged to stay in these facilities at the end of their pregnancies with high-risk pregnancies or those who live far away. While women in this home are provided with support and assistance, the challenges are that home births are less expensive, and some women may not want to leave their families, who rely on them for care (87).

There is evidence supporting MWH efficacy; maternity homes are likely to reduce maternal deaths in areas with limited access to healthcare (90). According to a cluster survey conducted in Zimbabwe with 235 respondents, nearly all (97%) women in MWH attended ANC at least once during their most recent pregnancy, and 66% gave birth in a hospital. The likelihood of giving birth in a hospital nearly increased sixfold when an MWH was used (87). Moreover, a cross-sectional study conducted in Zambia found evidence that the use of MWHs increased the number of ANC and post-natal visits. Zambia has acknowledged the effectiveness of MWHs in improving the demand for maternal care (91).

5.2 Community-based intervention:

The Alma Alta Declaration of 1978 opened the door for the expansion of community health workers (CHWs) programs and included volunteer CHWs in delivering essential health services at the village level. Numerous LICs are working to increase the number of qualified healthcare professionals to increase access to and coverage of essential medical services, including newborn and maternal health (MNH). CHWs are characterized as community-based health workers with less than two years of training who receive an incentive or volunteer, work in communities, and are not professionals(92). CHWs are culture-appropriate interventions, which leads to facilitating access, linking communities with health services, and providing education and support(89). Evidence shows that community-based intervention improves access and utilization of health services and health outcomes(92)(93)(94).

In SS, International donors have funded CHW programs through non-governmental organizations (NGOs), which have put several CHW programs into action. Communities have been taking part in the selection of volunteer CHWs. Resources have been wasted and duplicated because of inadequate coordination mechanisms among stakeholders. Although CHWs have received training, it was not enough. Disparities in the kinds of incentives offered to CHWs existed and persist today. Drug abuse and stock shortages were widespread; monitoring and supportive supervision efforts were insufficient(95).

In Ethiopia, Community health workers are frequently used to provide care. Health extension workers (HEWs) are a trained cadre of community-based health workers employed by the Ethiopian government since 2003. The HEWs have significantly improved the utilization of antenatal care and family planning (96). Ethiopian partnership conducted Community Maternal and Newborn Health (CMNH) training program to train the HEW, traditional birth attendants, and volunteer Community Health Promoters on maternal and neonatal care. The training improved maternal and neonatal health locally in rural Ethiopian areas where pregnant women have little access to healthcare facilities. The CMNH program

improved HEWs' performance and knowledge of pregnant women, family caregivers, and birth attendants(97).

In four of Zambia's poorest and remotest districts, a community-based initiative called Safe Motherhood Action Groups (SMAGs) was implemented to increase access to maternal and neonatal health interventions. They found a significant rise in ANC visits (at least four), SBA deliveries, and PNC receipts (93).

5.3 Mobile health clinics:

Mobile clinics are specially equipped vehicles that can deliver healthcare services to various health populations in their local communities. They act as resources in a health system to expand population access to healthcare, enforce disease prevention, and enhance access for vulnerable people as pregnant women. It is staffed by health professionals and is considered cost-effective intervention(98).

MHC has benefits like increasing accessibility, variety of services, and the ability to provide healthcare in remote areas, and during disasters, mobile clinics are a promising proposal in the health and medical systems. Mobile clinics are necessary in some rural areas because of the quality and condition of the roads and the lack of adequate transportation, especially for elderly patients and pregnant women who require ongoing medical care. However, they also have drawbacks like structural, procedural, and financial issues (99).

Evidence provides that MCH services through mobile clinics and outreach services increase the accessibility of health care (100). In Tanzania, mobile health clinics have been in use since the 1970s. Mobile health clinics are regularly used all year round by the Ministry of Health and Social Welfare (MOHSW) to provide reproductive, maternal, and child health services in collaboration with development partners. According to policymakers, mobile clinics have increased coverage of crucial maternal and child health interventions (101).

While a study to analyse the last SS household survey recommended that To enhance ANC services, the government and other stakeholders must introduce mobile clinical services in these isolated and rural areas(75). WHO established three well-equipped and trained mobile medical team in SS to respond to emergency and outbreak need (40).

5.4 Integration of traditional birth attendance:

One of the main goals of the WHO's Safe Motherhood Initiative (SMI) is to increase the accessibility and availability of SBAs (102).

Improving maternal health requires access to a skilled birth attendant (SBA). Women frequently rely on traditional birth attendants (TBAs) for delivery in low-income settings and rural areas with a shortage of trained staff (103). TBAs are typically older women regarded for their expertise and knowledge in the neighbourhood. They frequently lack literacy and learn their skill from experienced, older TBAs. They may operate independently or jointly with a specific facility or provider or be incorporated into the health system. TBA training may be the only way to maximize the use of community-level health workers for maternal and newborn health in settings without skilled birth attendants or where access to health facilities is restricted (104).

According to a meta-analysis, TBA training is aim to improve behaviours related to intrapartum and postnatal conditions(105).

Integration of TBA into health systems leading to increasing skilled birth attendance. An adequate number of qualified health professionals are required to integrate TBAs through training and supervision. Increased skilled birth attendance results from integrating TBAs into health facility activities as regular facility-based tasks, or permanent attending the deliveries(106). That needs respect from health workers, and incentives for TBA to prompt referral and good communication may promote sustainability. Nigeria's health sector has a shortage of human resources; as a result, the intervention of TBA integration into the health sector improved neonatal and maternal health(102).

In SS, the Ministry of Health hired and trained some TBAs to work in healthcare facilities. TBAs were also prohibited from attending home births in 2014. And the primary duty of the community-based TBAs was to refer women to healthcare facilities for childbirth. TBAs also received three days of training on evaluating pregnant women and spotting dangerous symptoms before, during, and after childbirth, with a monthly \$4 incentive given to each TBA and meetings between TBAs and the personnel working in healthcare facilities. After one year, many deliveries were referred, and some were conducted in the home(107).

The community and TBA accepted the new role of referring the women, and the women felt safe as they sought healthcare with TBA. Also, the TBA was happy as they improved maternal health and were a part of the health system. This intervention had challenges, some TBA had misconceptions as they only referred to the complicated case, insufficient incentive, training, supervision, and the distance to the health facility and insecurity (107).

Chapter 6: Discussion:

This chapter will discuss the key results from the available literature, factors influencing maternal health services and potential strategies/ interventions to arrive at recommendations.

Maternal health-related issues were observed in SS as early as childhood and adolescence. Females frequently are engaged in FGM, early marriage, and teen pregnancy. Child marriage leads to adolescent pregnancy. Child marriage is considered a violation of human rights; it affects maternal health and well-being during adulthood and frequently increases the risk of complications during pregnancy or childbirth. The most common reason for death in adolescent girls worldwide is these childbirth complications. In addition to child marriage, FGM and the low prevalence of family planning among women, low utilization of MHS exists across the country with disparities regarding place of residence, education, and wealth. All of this has made maternal health a concern which worsens their health outcome.

WHO urges nations to take essential steps towards achieving universal health coverage, which entails giving everyone access to high-quality medical care without financial hardship(108). While the utilization of MHS could positively impact maternal health, SS has a high MM level, one of the worst health indicators in the world. There is an unequal distribution of health facilities across the population and a severe shortage of essential health services resources such as equipment and health staff facilities. The government of SS has committed itself to improving maternal health. However, efforts should be made to ensure that all women receive a range of high-quality healthcare services in the country. The paramount ways to raise the quality of healthcare services starting by conflict, flooding affected areas, would be increasing the accessibility of medical services, such as increasing number of HFs, adding more healthcare workers, purchasing more medications and supplies, and making them available in all HFs. This can be done by enhancing the abilities and skills of current healthcare professionals and shifting towards upgrading TBA and community participation.

Even though some LICs have started public health initiatives to reduce maternal mortality, they continue to underestimate the importance of investing in women's health (109). According to this review's findings, women in SS are particularly vulnerable and have several obstacles due to many factors that prevent them to access and utilize the maternal health services.

Two main major challenges in SS are conflict and climate change. The intersection of these complex issues greatly hinders the utilization and access of MHS. These factors shall be discussed accordingly.

The most significant finding highlights the crucial impact of conflicts and political instability on women's safety. Pregnant women face several obstacles in seeking antenatal, assisted delivery, and PNC due to the fear of violence, which could endanger their lives or lead to sexual assault. Moreover, the effect on the transportation system has led to an increase in pregnant women's challenges in reaching healthcare facilities safely and on time. 60% of maternal deaths worldwide take place in unstable environments and war zones(110). Additionally, that also impacts the availability of medical infrastructure and essential supplies, hindering healthcare facilities' ability to provide services and human resources, as many health workers travel abroad, while those who remain in the country work is still affected by the security level. The study's findings reveal that safety influences home deliveries, especially at night when most births occur. Similar results from conflict-affected regions in Myanmar further underscore the importance of addressing security challenges to enhance MHS utilization(111). It also, leads to displacement to remote area which consider as barrier to access and utilization of MHS. To improve access to maternal healthcare, it is critical to implement measures that increase security and safety for pregnant women, ensuring they can access essential services without fear of violence or harm.

Health system was also undermined by conflict and climate change. The lack of staff and equipment that the single health facility needs to cover a large area while climate change worsen the situation regarding transportation and supplying the HF. Poor quality of care is a significant issue in conflict and post-conflict settings that is also alien to Uganda where poor quality of care due to conflict affects the utilization of MHS(112) . A lack of skilled birth attendance, medications, and long waiting times was

linked to service users' dissatisfaction. This is supported by studies from other developing nations such as Ethiopia, Kenya, Malawi, and Ghana (113)(114). In my opinion, South Sudan's issue with poor medical care requires immediate attention. The severe shortage of trained medical professionals, including doctors, midwives, and nurses, is a crucial factor causing the poor quality of care. With 90% of health posts in SS being staffed by unqualified individuals, that severely affect the public health sector (115).

Regarding the climate change. Transportation negatively affected, especially in areas affected by flooding. For pregnant women seeking medical care, transportation issues are crucial obstacles. Flooding incidents disrupt transport systems, making it challenging or even impossible for mothers to get to healthcare facilities. Pregnant women have few options for getting to medical facilities due to lack of means, bad weather that leads to flooding and bad roads conditions; this is also found in Mozambique(116) and Zimbabwe(117). The cost of transportation is another major factor that severely restricts the use of MHS. Getting to medical facilities can be prohibitive for pregnant women and their families struggling financially, as more than half of the population lives in poverty. This problem is made worse by flood-related interruptions to their sources of income, leaving them unable to pay for travel costs. Climate change affects enabling factors such as preventing geographical accessibility regarding transportation, source of income, it also hinders schools and hurts education, which plays a role in access and utilization of MHS. Additionally, it affects the health system in terms of preventing the supply of HFs. It takes a multifaceted approach to address how transport affects the use of MHS. Accessibility to healthcare facilities can be improved by investing in and upgrading transport infrastructure in affected areas. The lack of healthcare access during flood events can also be filled by implementing alternative transportation options, such as community-based transportation services, which will also increase the use of MHS.

Regarding beliefs, tradition and culture significantly impact institutional childbirth, and less affect ANC attendance. This is likely a result of the perception that ANC is important for confirming the unborn child's health and treating medical issues.

Moreover, poverty, low socioeconomic status, displacement, are interconnected with the impact of war and climate change in SS. These factors interact and impact the community's awareness of the health advantages of health facility delivery and maternal healthcare. They also lead to economic barriers which prevent the utilization. The economic barrier to delivery at a health facility is also reported in Mozambique(116). Even though women and families know that ANC is available, they stay away from it. This is emphasized by a study from Ghana which found that most women do not attend ANC due to a lack of awareness of its advantages(118). There is a widespread belief that seeking HF is unnecessary because pregnancy is a normal process.

Other findings among pregnant women include low levels of education and awareness of maternal and general health related to traditional harmful practices. Gender norms, which outline the place of women in families and society, impact of the level of illiteracy among women. In SS, women's roles are primarily related to reproduction with some limited productive or economic activities. Remember that maternal health and well-being are related to the level of education promoting a high level of awareness and, indirectly, the ability to afford healthcare.

Women's autonomy and their families' support are other factors in determining the use of MHS in SS. A woman's access to and use of MHS are significantly influenced by her degree of autonomy in making decisions about her own healthcare. Accessing MHS may be difficult in societies where women have limited decision-making authority, particularly regarding their health and reproductive options, like in Tanzania, where the husbands decide how and where the pregnant woman will deliver (119). Due to societal norms and limitations of autonomy, women face obstacles when seeking MHS and family planning. Family support is another factor that can have a big impact on a woman's decision to seek maternity care. Support, particularly from partners and other relatives, can motivate pregnant women to prioritize their health and seek medical care. In relation to maternal health, cultural norms and gender roles also impact how autonomous women are and how their families support them. The attitudinal barriers women frequently face when seeking maternal healthcare are another finding in this review that needs to be highlighted. For instance, stigmatizing single pregnant women may prevent them from

utilizing MHFs. Attitude as physical or verbal abuse considering a barrier to healthcare, as in Malawi(120).

There are evidence-based interventions to improve the use of maternal health services enhancing maternal health outcomes. Community health workers and traditional birth attendance-related interventions are an important in advancing maternal health. They spot pregnant women in their neighbourhoods. The community culturally accepts them, and they will strengthen the health system, which has a shortage of human resources. TBA is usually illiterate and old, while the community health worker is educated and younger than TBA. Training them to promote the benefits of prenatal care and offer advice on the advantages of skilled birth attendance will improve the maternal outcome. Additionally, these professionals serve as intermediaries, facilitating communication between pregnant women and healthcare providers, promoting referrals, and helping follow up the delivery. Their presence has enhanced community trust, reduced barriers to receiving MHS, and given women the power to decide what is best for their reproductive health. In terms of community health worker findings from Zambia, demonstrates that training CHWs in safe motherhood interventions is essential for addressing low MNH service utilization (93). Integration of TBAs into the formal healthcare system and the provision of standardized training have both shown to be successful tactics that consider their role and cultural significance. By giving TBAs the necessary knowledge and abilities, they can recognize high-risk pregnancies, provide fundamental prenatal care, and advocate for the importance of hospital deliveries. Collaboration between trained TBAs and knowledgeable healthcare professionals has increased acceptance of facility births therefore decreased maternal mortality. In contrast, this intervention faces many challenges in SS as training, supervision, and incentives are insufficient. These obstacles could be overcome with increased salaries and frequent training and supervision to facilitate transport. This intervention is controversial and carried out in Kenya and Somaliland; their TBAs could easily change their roles by receiving the appropriate training and sufficient incentives to improve the health system's ability to meet women's needs (121).

Furthermore, to overcome the accessibility barrier exacerbated by transport and cost, mobile health clinics and maternity waiting homes have become promising interventions for bridging the distance between rural communities and health facilities. The health care will be near the residual place. These interventions improve access to prenatal care, skilled birth attendants, and postpartum care by bringing crucial MHS closer to pregnant women. Mobile health clinics (MHCs) provide various services through routine visits, such as prenatal examinations, health education, family planning advice, and fundamental emergency obstetric care. These clinics' adaptability and mobility have produced encouraging results in improving the use of MHS and lowering maternal mortality in difficult-to-reach areas. MHC was a great alternative to providing adequate medical care during natural disasters like flooding, where infrastructures were destroyed, or people could not access healthcare facilities, as in Malaysia in 2006(98). At the same time, MWH is crucial in reducing delays in caring for pregnant women. MWH remove the physical and seasonal barrier in areas affected by the conflict, which is aligned to a study from Liberia that found that MWH in rural area post-conflict reduces the distance barrier to MHS(122). Pregnant women can access timely, skilled birth attendants and emergency obstetric care by remaining close to medical professionals during the last few weeks of pregnancy, which lowers maternal mortality and morbidity. MWHs also provide PNC, social support, high-risk pregnancy monitoring, health education, and counselling, promoting an environment where women receive information and support.

In conclusion, there is a low uptake of maternal health services, mainly due to conflict and climate change, which further interact with other factors and affect the access and utilization of MHS. Additionally, characterizing demand-side factors such as education, low autonomy, gender, and poverty play a crucial role in seeking the MHS. Thus, reviewing interventions from SS and similar countries to improve MHS utilization and maternal health.

Limitations and strength of the study:

While reliance on an outdated national health survey from 2010 may not accurately reflect the current MHS utilization in SS, reports from NGOs data provide a current snapshot of difficulties and patterns of utilization. Moreover, there are limited literature reviews and most of papers present multiple factors,

but having separate literature for each crucial factor would help to fully understand the whole picture. A contextualized view of the utilization of MHS is made possible by extracting data from various sources, including NGOs, peer reviews, and household surveys, encouraging a comprehensive interpretation. The findings also serve as a start for understanding important utilization factors and directing future research and interventions. The recognition of data quality limitations emphasizes the need for improved data management, potentially driving improvements in maternal health information systems. Additionally, some papers focus only on one geographical location, which limits the external validity of the studies. And several studies are qualitative without proportion which may not give a clear insight on the weight of different factors. There is no study regarding one of the sub-core elements in the framework. Anderson's framework serves as a guide as it includes the external factors besides the core factors.

Chapter 7: Conclusion and recommendations:

7.1 Conclusion:

Despite the global action plans constantly being created to guarantee that equitable access to maternal healthcare should be achieved by 2030, in accordance with the UN, SDGs and the Global Strategy for Women's, Children's, and Adolescent Health, SS has the worst maternal health indicators. There is underutilization of maternal health services in SS resulting from external factors such as insecurity, climate change, and health system factors. Additionally, transport and health services cost, distance to HFs, educational barriers, lack of autonomy, gender issues and cultural beliefs. This thesis extends to reviewing interventions from similar countries and SS to improve MHS utilization and maternal health, such as maternity waiting homes, community participation, mobile health clinics, and strengthening the TBA role. It is possible to make significant progress in reducing maternal mortality and improving maternal health outcomes by addressing the factors preventing utilization and implementing evidence-based interventions. This literature review has explored various factors and interventions that can enhance maternal health outcomes and has shed light on the crucial issue of maternal health service utilization. It intends to add to the knowledge of maternal health in SS and can be a valuable tool for stakeholders to increase the use of MHS. This will take coordinated efforts to ensure every woman gets the high-quality maternal healthcare she deserves because the path to better maternal health outcomes remain open.

7.2 Recommendation:

The thesis suggests evidence-based strategies and interventions to improve the utilization of maternal health considering its findings and conclusions. Those recommendations are at the policy, national, service delivery, community, and research levels.

7.2.1 Policy level:

- To deal with security issues, the government and international partners can create a safer environment by stepping up security measures to facilitate access to MHS without hindrance.
- To promote the integration and improvement of Community Based Health Care (CBHC) and Basic Health Services (BHS) within the broader framework of maternal health prioritize to unsafe, flooding affecting, remote areas where HS cannot reach.
- To strengthen the health system by creating an efficient and effective healthcare system, by investments in the health workforce by organizing the training of various health professionals in accordance with needs assessments, with a particular emphasis on improving sexual and reproductive health and rights (SRHR) skills for all staff. And improving facilities and supply chain, putting in place an integrated health information system, utilizing community health workers, and raising health financing by increasing health allocation.

7.2.2 National level:

- Conducting a new national household survey, to offer valuable insights into maternal health status. The findings will play a role, in shaping policies, programs, and interventions that are grounded in evidence with the aim of enhancing maternal health.
- Conducting needs assessment and gap analysis map, and co-creation and implementation of the health services coverage map with development partners. This map would show how health services are distributed geographically, ensuring that many women can access them within driving distance.

- Strengthening intersectoral collaboration by promoting teamwork, among government ministries and sectors SS can devise enduring strategies to enhance health outcomes. Such as improve Transportation Infrastructure to Increase Access to Maternal Health Services as a public-private partnership, transportation subsidies.

7.2.3 Services delivery level:

- Strengthening Implementation and Supervision Mechanisms by capacity building for health workers, strengthening supervisory systems, implementing performance-based incentives, improving data quality, and encouraging interagency collaboration.
- Building and repairing health facilities in regions where gaps in coverage have been noted. Health facilities should also be provided with fundamental pharmaceuticals and medical equipment to ensure effective service delivery. including establishing mobile health teams in remote or conflict-affected areas, MWH, and outreach programs.

7.2.4 Community level:

- Strengthening the capacity of TBAs, village health committees, and village health workers. Particularly in areas hit by crises, these community health workers ought to be able to offer a wider range of services, such as helping with deliveries and providing fundamental ANC, PNC, family planning (FP) services, and referral system.
- Establishing a strong supervision system that integrates CBHC with nearby Primary Health Care (PHC) facilities for ongoing guidance, support, and quality assurance to ensure effectiveness.

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Annexes

Annex1: Table Research strategy

Objectives	Source	Type of Source	Keywords		Context
			AND	OR	
Objective1 To describe the maternal health status, harmful practices, and use of maternal health services in South Sudan.	Scientific Publications Peer-reviewed Literature Grey literature	Google Scholar, VU library, PubMed, national household survey, NGOs reports	Maternal health, health practice, child marriage, adolescent pregnancy, ANC, PNC, delivery, FGM, maternal mortality, national policy, maternal services	OR	South Sudan Sub-Saharan Africa
Objective2 To describe individual and socio-culture factors and the enabling factors, need, and evaluate factors that affect the access and utilization of maternal health services.	Scientific publications Peer-reviewed Literatures Grey literature	Google Scholar, VU library, PubMed, NGOs reports	Education, maternal age, autonomy, culture, transportation, cost, family support, traditional birth attendance, knowledge, gender, perceived need, and access.		South Sudan
Objective3 To describe the external environmental, and health system factors from supply side that influence access and utilization of maternal health services.	Scientific publications Peer-reviewed Literature Grey literature	Google Scholar, VU library, PubMed, NGOs reports	Climate change, flooding, health system, staff, infrastructure, insecurity, quality of care.		South Sudan
Objective4 To review evidence-based interventions for safe motherhood in South Sudan and other countries in other contexts.	Scientific publications Peer-reviewed Literature	Google Scholar, VU library, PubMed,	Maternity waiting home, intervention, access, utilization, motherhood, community participation, traditional birth attendance, and mobile health clinics.		Sub-Saharan Africa, South Sudan, post-conflict setting
Objective5 To share findings and recommendations for effective strategies and evidence-based intervention with policymakers, INGs, private and public health sectors, and health professionals to improve maternal health.					