

**DETERMINANTS OF UTILIZATION OF REPRODUCTIVE HEALTH SERVICES  
AMONG WOMEN OF REPRODUCTIVE AGE IN SOUTH SUDAN'S SELECTED  
PUBLIC HEALTH FACILITIES**

**EMMANUEL TIMOTHY THWOL ONAK**



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**DECLARATION AND APPROVALS**

This thesis report is my original work and has not been presented for a degree in any other university or for any other award.

Signature  \_\_\_\_\_ Date 11 July 2024

Emmanuel Timothy Thwol Onak

PHDPH/2020/68781

**SUPERVISORS**


This thesis report has been submitted with our approval as University Supervisors.

Signature:  \_\_\_\_\_ Date: 11.07.24

Dr. Alfred Owino Odongo (PhD)

School of Public Health

Mount Kenya University

Signature:  \_\_\_\_\_ Date: 11/7/2024

Dr. John Kariuki (PhD)

School of Public Health

Mount Kenya University

## DEDICATION

I dedicate this work to my family for their continued emotional, spiritual, and financial support. I

extend my gratitude to my supervisors for their guidance.



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## ABSTRACT

The utilization of contraceptives among married women in Sub-Saharan Africa is significantly low, standing at 13 per cent. This low contraceptive use contributes to a high total fertility rate of 5.5 children per woman and an increased adult lifetime risk of maternal death. Notably, Africa faces the highest maternal death risk at 1 in 26, while developed countries exhibit the lowest risk at 1 in 7,300. The study's primary goal was to explore the factors influencing the uptake and utilization of reproductive health services among women of reproductive age in public health facilities in South Sudan. The study employed a mixed-methods approach, including a longitudinal ecological study and an analytical cross-sectional study conducted in selected States - Western Equatoria and Central Equatoria. The target population included women aged 15 to 49 visiting health facilities during the study period and key informants involved in reproductive health services and policy implementation. A sample size of 384 respondents, determined through Fisher's formula, was employed for women of reproductive age. The sampling process utilized a multi-stage cluster random sampling method, with the initial stage involving the selection of health facilities and the subsequent stage involving the selection of participants. Data collection methods encompassed structured questionnaires, in-depth interviews, focus group discussions, and data abstraction tools. Quantitative data analysis involved descriptive statistics and inferential analyses, and statistical significance was represented by p-value statistic, where a p-value of less than 0.05 was regarded as statistically significant. Qualitative data underwent content and thematic analysis to identify common patterns and trends. The study's findings in South Sudan's public health facilities indicate that family planning and STI prevention are the most used (25.1% each) RHS, followed by maternal and newborn care (18.1%) and HIV counselling and testing (15.3%). While overall uptake of reproductive health services increased over the years, there were declines during the third quarter from 2015 to 2020, coinciding with the rainy season. Study findings demonstrated that there are seasonal differences in the utilization of RHS during the first and third quarters throughout the years 2015 to 2022. Importantly, there was a consistent decline in the uptake of RHS during the third quarter, which coincided with the rainy season of August and September. Socio-cultural factors played a role, with age (p-value = 0.049), place of residence (p-value = 0.046), and educational (p-value = 0.000) level influencing utilisation. Furthermore, awareness of nearby clinics, distance from clinics, and the availability of specific contraceptives were related to service utilisation. Adequate and qualified healthcare staff, education levels, manageable workloads, and fair compensation were identified as crucial factors in improving reproductive health service delivery and access in South Sudan's public health facilities. These findings can guide policymakers and stakeholders in developing interventions and strategies to promote reproductive health and improve access to services in South Sudan. It highlights the need for improving service availability, addressing socio-cultural barriers, ensuring accessible facilities, and adequately supporting the health workforce to enhance RHS utilisation.

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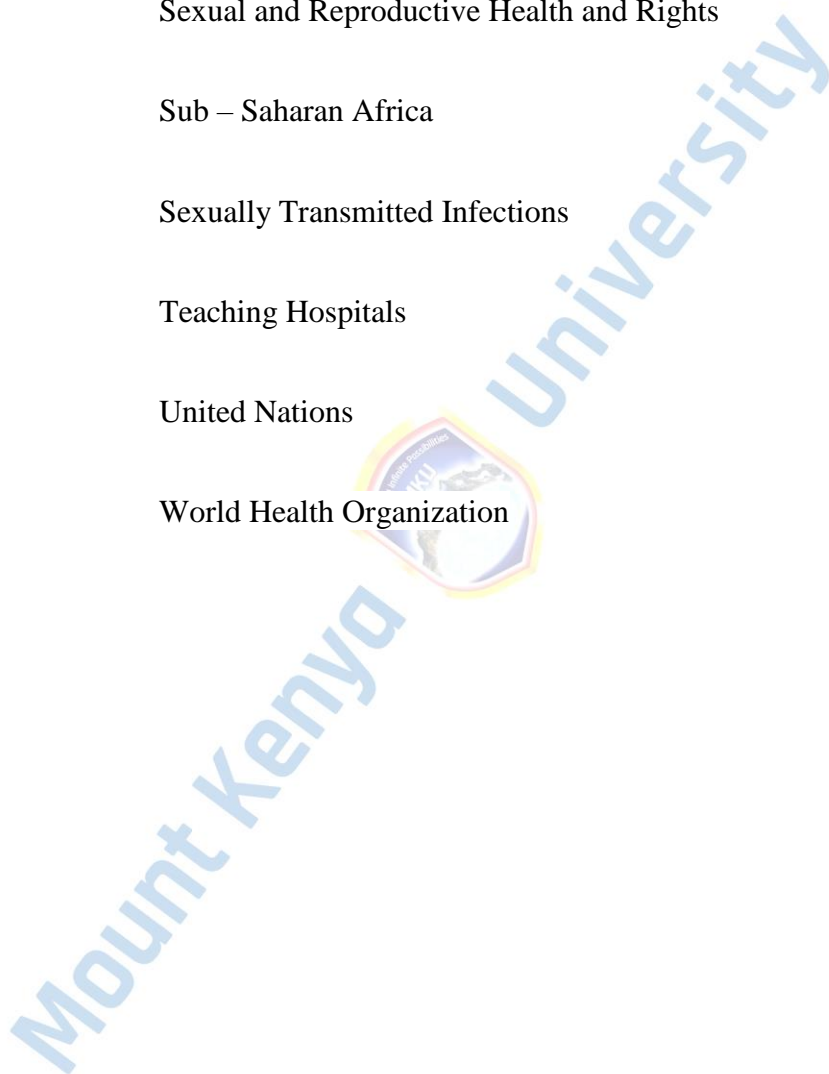
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## LIST OF ABBREVIATIONS AND ACRONYMS

<b>ASRH</b>	–	Adolescent Sexual and Reproductive Health
<b>BPHNS</b>	–	Basic Package of Health and Nutrition Services
<b>CH</b>	–	County Hospitals
<b>CHW</b>	–	Community Health Workers
<b>DHS</b>	–	Demographic and Health Survey
<b>FGM</b>	–	Female Genital Mutilation
<b>HIV</b>	–	Human Immunodeficiency Virus
<b>MDGs</b>	–	Millennium Development Goals
<b>MKU</b>	–	Mount Kenya University
<b>MoH</b>	–	Ministry of Health
<b>OBA</b>	–	Output-Based Approach
<b>PHCCs</b>	–	Primary Health Care Centres
<b>PHCUs</b>	–	Primary Health Care Units
<b>RH</b>	–	Reproductive Health
<b>RHS</b>	–	Reproductive Health Services
<b>RMNCAH</b>	–	Reproductive, Maternal, Newborn, Child and Adolescent Health

<b>SDGs</b>	–	Sustainable Development Goals
<b>SH</b>	–	State Hospitals
<b>SRH</b>	–	Sexual and Reproductive Health
<b>SRHR</b>	–	Sexual and Reproductive Health and Rights
<b>SSA</b>	–	Sub – Saharan Africa
<b>STIs</b>	–	Sexually Transmitted Infections
<b>THs</b>	–	Teaching Hospitals
<b>UN</b>	–	United Nations
<b>WHO</b>	–	World Health Organization



## OPERATIONAL DEFINITIONS OF KEY TERMS

**Reproductive health:** It means individuals can engage in a fulfilling and safe sexual life, and they possess the freedom to choose whether, when, and how frequently they want to have children.

**Reproductive health care:** This refers to the array of approaches, strategies, and healthcare options aimed at promoting and maintaining sexual and reproductive health, as well as preventing and addressing issues related to sexual well-being.

**Sexual and reproductive health:** A person's right to a healthy body and the autonomy, education and healthcare to avoid sexually transmitted infections or unintended pregnancy.

**Determinants/Factors:** Various elements converge to influence the well-being of both individuals and communities. Factors shaping the uptake and utilization of reproductive health services encompass the social and economic context, the physical surroundings, and an individual's distinct attributes and actions.

**RHS accessibility:** In this study, the term "accessibility" pertains to the concept of geographical accessibility as perceived by the respondents. Those respondents residing within a 1.6-km (1-mile) radius from the nearest RHS center, and who could reach the center with less than a 30-minute walk from their homes, were categorized as having high geographical accessibility. Those who did not meet these criteria were classified as having low geographical accessibility.

**RHS utilization/uptake:** Utilization, also referred to as uptake, in this study, pertains to the act of women of reproductive age accessing and utilizing the available RHS in the selected public health facilities within the past 12 months. These services encompass SRH information and education,

modern contraceptive services, VCT, as well as services related to the diagnosis and treatment of STIs.

**SRH information and education service utilization:** Individuals who have received information and education on SRH matters from healthcare professionals working at any of the service-providing locations within the previous 12 months.

**Reproductive health services:** This encompasses the utilization of services such as SRH information and education, modern contraceptive services, VCT, as well as services for the diagnosis and STIs. It is imperative that women of reproductive age can readily access these services.



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## **CHAPTER ONE: INTRODUCTION**

### **1.0 Introduction**

The introduction provides an overview of the study, highlighting the importance of reproductive health (RH) and the utilization of reproductive health services (RHS) among women of reproductive age in Africa, with a particular focus on South Sudan. It sets the stage for the research by emphasizing the significance of RH for individual and community well-being and the critical issues of high fertility rates and maternal mortality risks in the region.

### **1.1 Background of the Study**

RH is vital for the overall well-being of individuals and communities, encompassing the physical, mental, and social dimensions of reproductive processes. In Africa, the utilization of RHS among women of reproductive age is critically low, contributing to high fertility rates and significant maternal mortality risks (Alamneh et al., 2022; Barbi et al., 2021). This study seeks to examine the current level of RHS utilization, explore the relationship between seasonal weather changes and RHS use, identify socio-cultural factors influencing RHS utilization, evaluate the impact of health facility characteristics on RHS uptake, and assess the influence of the health workforce on RHS utilization in the selected public health facilities.

RH, as defined by the World Health Organization (WHO, 2021), is characterized by a comprehensive state of physical, mental, and social well-being. It goes beyond the mere absence of disease or infirmity, encompassing all aspects related to the reproductive system, its functions, and associated processes. According to the United Nations Population Fund (UNPF, 2019), RH signifies that, in addition to being free from disease or infirmity, individuals possess the ability to

reproduce, regulate their fertility, and engage in and enjoy sexual relationships. Furthermore, RH implies that reproduction leads to a successful outcome, ensuring infant and child survival, growth, and healthy development. It also means that women can experience pregnancy and childbirth safely, regulate their fertility without health risks, and engage in sexual activities without jeopardizing their well-being (Starrs and Anderson, 2016).

Climate change is no longer a distant threat in sub-Saharan countries; its impact on the health sectors of these nations is evident. Changing precipitation patterns, extreme weather events, and rising temperatures are significantly affecting reproductive health services (United Nations Climate Change, 2020). As these governments and their development partners develop their climate adaptation strategies, prioritizing the adaptation of reproductive health services to address the challenges posed by climate change is crucial (World Meteorological Organization, 2020). Key stakeholders must allocate resources to strengthen reproductive health services. Extreme weather events, such as floods or droughts, often disrupt the utilization of these services. Therefore, it is essential to fortify health facilities' infrastructure to ensure reproductive health services remain accessible during such events.

Several studies have shown that sociocultural factors contribute to the underutilization of reproductive health services (He Z et al., 2021; Omer et al., 2021). For example, evidence suggests that socioeconomic barriers are closely linked to the low level of basic health coverage in Africa, where only 48% of the population has access to necessary healthcare services (Alamneh et al., 2022; Cullinan, 2021). Additionally, sociocultural factors such as ethnicity, religion, household decision-making, gender and autonomy, and levels of information and education can limit access

to maternal healthcare services. These factors present significant barriers across the continent (Barbi et al., 2021).

Research on care in low- and middle-income countries (LMICs) indicates that the quality of health facilities varies within countries, with some facilities significantly outperforming others. This suggests that higher-quality care is achievable even in settings with similar resource constraints (Kruk et al., 2018). Various factors contribute to this variation in facility performance, including the underlying strength of the local health system. However, there are still knowledge gaps regarding the facility-level and contextual factors that influence the quality of reproductive health services in primary care in LMICs (Kruk et al., 2017). More evidence is needed to identify actionable and modifiable facility-level characteristics to enhance the utilization of reproductive health services.

Nurses and midwives are often at the forefront of public health facilities and are the primary healthcare professionals women consult for their RH needs. However, these healthcare workers are frequently underutilized, particularly by adolescents, due to various factors such as negative behaviors and attitudes of the healthcare staff (Geary et al., 2014). These negative behaviors and attitudes can significantly impact women's access to and utilization of RHS, as well as the overall quality of care. For instance, studies in Sub-Saharan Africa indicate that such negative behaviors discourage women from seeking antenatal care and deter young people from attending clinics or follow-up visits (Jonas et al., 2015).

The urgent need for this study arises from the critical gaps in RHS utilization in South Sudan's public health facilities. Despite significant strategic efforts by the South Sudanese government, persistent challenges related to governance, limited capacity, and fragile healthcare infrastructure

continue to hinder progress. With the highest maternal mortality risk globally, low contraceptive prevalence, and high teenage pregnancy rates, it is imperative to identify and address the determinants influencing RHS uptake. Furthermore, the exacerbating effects of climate change, coupled with socio-cultural barriers and disparities in health facility performance, underscore the necessity of context-specific research.

## **1.2 Statement of the Problem**

RHS is crucial in promoting the overall well-being of women of reproductive age, encompassing physical, mental, and social dimensions essential for healthy reproductive processes (WHO, 2021; UNPF, 2019). Despite the critical importance of RHS, utilization rates remain significantly low across Sub-Saharan Africa, contributing to persistently high fertility rates and alarming maternal mortality risks (Alamneh et al., 2022; Barbi et al., 2021). In South Sudan, a country grappling with governance challenges, limited healthcare capacity, and fragile infrastructure, the uptake of RHS in public health facilities continues to face substantial barriers (Ministry of Health, 2013; WHO, 2015). These systemic challenges have impeded the government's efforts to improve healthcare delivery, as outlined in strategic plans such as the South Sudan Development Plan and the Health Sector Development Plan.

Moreover, South Sudan exhibits one of the highest maternal mortality ratios globally, alongside low contraceptive prevalence and significant rates of teenage pregnancy (WHO, 2015). These statistics underscore the urgent need for effective interventions to enhance the accessibility, quality, and utilization of RHS. Climate change further exacerbates these challenges, with extreme weather events disrupting healthcare services and highlighting the vulnerability of health infrastructure in South Sudan (World Meteorological Organization, 2020). Despite the recognition

of sociocultural factors such as ethnicity, religion, and gender roles influencing healthcare access across Africa (He et al., 2021; Omer et al., 2021), specific contextual factors affecting RHS utilization in South Sudan remain understudied.

Therefore, this study aims to address these critical gaps by investigating the determinants influencing the uptake and utilization of RHS in selected public health facilities in South Sudan. By exploring the interplay of seasonal weather changes, socio-cultural influences, health facility characteristics, and the impact of the health workforce on RHS utilization, this research seeks to provide context-specific insights. These insights are crucial for developing targeted policies and interventions aimed at overcoming barriers to RHS access and improving reproductive health outcomes in South Sudan. The findings of this study are expected to contribute valuable evidence to inform decision-making and resource allocation towards strengthening reproductive health services in settings facing similar challenges globally.

### **1.3 Objectives of the Study**

#### **1.3.1 General Objective**

To assess the determinants of utilization of reproductive health services among women of reproductive age in South Sudan's public health facilities

#### **1.3.2 Specific Objectives**

The study sought to achieve the following specific objectives:

1. To examine the level of utilization of RHS in selected South Sudan's public health facilities.

2. To determine whether there is a relationship between changes in weather season and utilization of RHS in selected South Sudan's public health facilities.
3. To determine sociocultural factors influencing the utilization of RHS in selected South Sudan public health facilities.
4. To evaluate the influence of health facility characteristics on utilization of RHS in selected South Sudan's public health facilities.
5. To evaluate the influence of the health workforce on the utilization of RHS in selected South Sudan public health facilities.

#### **1.4 Research Questions**

The study sought to answer the following research questions:

1. What is the overall utilization rate of RHS among women of reproductive age in selected public health facilities in South Sudan?
2. How does seasonal variation, such as rainy seasons and dry seasons, influence the utilization patterns of RHS in South Sudan public health facilities?
3. What are the key sociocultural factors that significantly influence women's decision-making processes regarding the utilization of RHS in South Sudan public health facilities?
4. How do characteristics of health facilities, such as infrastructure quality and availability of RH commodities, impact the utilization rates of RHS in South Sudan public health facilities?

5. What role do healthcare providers, particularly nurses and midwives, play in influencing women's utilization of reproductive health services in South Sudan public health facilities?

## **1.5 Hypotheses**

1. The utilization rate of RHS in selected South Sudan public health facilities varies significantly among different demographic groups and geographic locations.
2. There is a seasonal variation in the utilization of RHS in South Sudan public health facilities, with higher utilization during stable weather seasons compared to extreme weather seasons.
3. Sociocultural factors, including religious beliefs and traditional norms surrounding RH, significantly influence the decision-making process regarding the utilization of RHS in South Sudan public health facilities.
4. Health facility characteristics such as infrastructure quality, availability of reproductive health commodities, and staffing levels have a significant impact on the utilization rates of RHS in South Sudan public health facilities.
5. The attitudes, knowledge, and availability of healthcare providers, particularly nurses and midwives, significantly influence the utilization of RHS in South Sudan public health facilities.

## **1.6 Significance**

The significance of this study is multifaceted, addressing critical aspects of global health and development. According to WHO Africa (2020), achieving universal access to Sexual and Reproductive Health and Rights (SRHR) is essential for realizing the Sustainable Development

Goals (SDGs), with particular emphasis on SDG 3 (ensuring good health and well-being) and SDG 5 (promoting gender equality). Despite global efforts, indicators reveal that the African region still lags behind in progressing towards these goals, underscoring the urgent need for targeted interventions.

The study's significance is further underscored by the recognition that RH plays a pivotal role in shaping various development outcomes, leveraging the demographic dividend (Li & Rimon, 2018). Access to enhanced reproductive healthcare is crucial for reducing fertility rates, preventing sexually transmitted infections (STIs), and improving pregnancy outcomes. These outcomes, in turn, generate extensive benefits at the individual, family, and societal levels.

In the context of South Sudan, where the uptake and utilization of RHC face considerable challenges, this study holds particular importance. By exploring the determinants of RHC uptake and utilization in public health facilities, the study aims to provide context-specific insights that can inform targeted interventions. The findings have the potential to guide policymakers, healthcare providers, and stakeholders in developing strategies to strengthen RH services, address governance issues, and enhance the overall healthcare system. Ultimately, the study's significance lies in its potential to contribute to improved maternal and reproductive health outcomes, gender equality, and the overall well-being of women in South Sudan, aligning with broader global health and development goals.

## **1.7 Justification**

This research holds substantial significance as it makes a dual contribution to both scholarly discourse and health policy, addressing critical issues related to healthcare access disparities. The

study's timeframe aligns with the post-2015 implementation of the Millennium Development Goals (MDGs), providing insights into alterations in RHS utilization and inequalities following the MDGs' implementation and the introduction of the Sustainable Development Goals (SDGs). Consequently, the study's results serve as a crucial assessment of the utilization and equity ramifications of shifts in RH outcomes during the post-MDG implementation phase.

A distinctive aspect of this study is its exploration of the impact of weather changes on the uptake of RHS. By examining these linkages, the evidence generated becomes valuable for decision-makers, climate change advocates, humanitarian organizations, and gender equality proponents. The findings can be instrumental in raising awareness of the interconnected nature of climate change, reproductive health, and gender equality, offering opportunities to promote the uptake and utilization of RH as a foundational aspect of climate action. Moreover, the study advocates for climate-related policies and practices that employ a rights-based approach, ensuring the protection and promotion of individuals' rights to bodily autonomy.

This study addresses critical health disparities in South Sudan, where RHS are underutilized amidst daunting health challenges. With maternal mortality rates as high as 789 deaths per 100,000 live births, inadequate access to and utilization of RHS contributes significantly to these alarming statistics (WHO, 2015). Teenage pregnancies, often associated with low RHS utilization, further compound health risks, including unsafe abortions and maternal mortality. These issues highlight the urgent need for comprehensive interventions addressing sociocultural barriers, healthcare infrastructure limitations, and workforce capacity constraints. By focusing specifically on RHS, this study aims to bolster maternal health outcomes and promote broader societal benefits such as gender equality and economic development. It seeks to provide empirical evidence that can inform

targeted policies and interventions, aligning with sustainable development goals and fostering tangible improvements in RH delivery.

The outcomes of the study provide a robust foundation for guiding the implementation of health interventions aligned with the SDGs, echoing the assertions of Boerma et al. (2018) and Hogan et al. (2018). This is particularly pertinent as the achievement of health and non-health-related SDGs hinges, in part, on achieving overall enhancements in access to suitable RH services and reducing disparities in access. Researchers in this field can leverage the study's findings as a fundamental reference, contributing to the ongoing discourse and fostering further investigations to deepen our understanding of the complex dynamics influencing RHS utilization in South Sudan. The study, therefore, plays a pivotal role in shaping both academic inquiry and practical policymaking for improved reproductive health outcomes in the region.

South Sudan's unique context as a post-conflict nation with fragile healthcare infrastructure underscores the significance of this study. Despite its critical health indicators and pressing reproductive health needs, there remains a notable lack of recent empirical research on RH service utilization, especially regarding the impacts of weather changes and health system characteristics. This study aims to fill these knowledge gaps by generating context-specific insights that can guide evidence-based interventions and policy recommendations not only within South Sudan but also in similar resource-constrained settings globally. By doing so, it aims to contribute to global health equity efforts, strengthen health systems resilience, and advocate for sustainable improvements in reproductive health outcomes. Ultimately, this research holds promise in fostering actionable insights for policymakers, researchers, and practitioners committed to enhancing reproductive

health services and mitigating health disparities in South Sudan and comparable contexts worldwide.

## **1.8 Scope of the Study**

The scoping review and data collection included information derived from South Sudan's Ministry of Health from 2015 to 2020. Data collection contained information concerning uptake and utilization of RHS in the health sector. The researchers anticipated the obtainment of relevant studies and information that report on the determinants of uptake and utilization of RHS. The study focused on the post-2015 development agenda for the MDGs. The shift in global health from MDGs to SDGs in 2016 represents a significant milestone, particularly for resource-constrained nations grappling with the enhancement of healthcare quality at the grassroots level.

The study targeted officials in South Sudan's Ministry of Health and other stakeholders in the health sector from 2015 to 2020. The period is unique because: first, it is during this period that MDGs targets were set to be met by 2015 and using numerical indicators to measure progress. Secondly, in August 2015, a peace agreement was signed in South Sudan under significant international pressure. This agreement sought to bring an end to the violent civil war that had erupted two years prior. This timeframe provided an opportunity to examine the factors influencing the adoption and utilization of RHS within South Sudan's public health facilities.

## **1.9 Delimitations**

Various determinants affecting the adoption and utilization of reproductive health services (RHS) can be explored. These include service delivery, health workforce, health information systems, access to essential medicines, financing, and leadership and governance. However, this study

limits itself to investigating the influences of socio-cultural factors, health workforce, service delivery, and change in weather seasons on the uptake and utilization of RHS in South Sudan's health sector.

The researcher considered participants from different walks of life residing in South Sudan who are visiting public health facilities during the period of data gathering. However, selection of target population was made according to geographical locations and livelihood groups i.e. male, female, youth, and non-youth as well as any other group/s that may exist and relevant for disaggregation. Participants also included health workers from all professional health cadres in the four levels of the South Sudan health system.

#### **1.10 Assumptions and Limitations**

Existing literature suggests a correlation between residents' health issues and their uptake and utilization of RHS, whether through direct or indirect pathways, as a higher degree of service utilization tends to mitigate health problems. Despite the identification of certain factors influencing RHS utilization, further in-depth exploration is warranted, particularly in regions devoid of prior research. Thus, the primary objective of this study was to examine the extent of RHS utilization and identify associated factors among individuals residing in the selected states, with the aim of offering evidence-based insights and recommendations for potential future interventions. Additionally, it serves to furnish pertinent information conducive to the development of suitable RH programs within South Sudan's public health facilities.

This study was conducted within the public health facilities in South Sudan across the two selected States, however, the facilities are few and mostly inaccessible, and violence continues to affect

healthcare workers and communities. The study, therefore, was limited to public health facilities in South Sudan and the results from the study cannot be generalized beyond the public health sector.

Due to the limited literature studies known to the researcher on the determinants of uptake and utilization of RHS in South Sudan's public health facilities, much of the literature used to inform this study is from other neighbouring countries. The transferability of knowledge generated from the regional context to the local context may not be applicable because South Sudan as a country has its unique characteristics including conflict and climate change issues. Therefore, some conclusions that were reached in the study may only be limited within the local context.



Mount Kenya

University

## **CHAPTER TWO: LITERATURE REVIEW**

### **2.1 Introduction**

The RH program plays a pivotal role in formulating guidelines, norms, and standards for Sexual and Reproductive Health and Rights (SRHR) across diverse contexts. Its mission involves supporting member states in the development, implementation, and evaluation of effective policies and strategies related to Sexual and Reproductive Health (SRH). The overarching goal is to enhance SRH outcomes across the life cycle, fostering universal coverage and equitable access to essential services (He et al., 2021). In parallel with the narrative of economic growth, health outcomes have witnessed significant advancements over the past two decades.

The study's objective is to explore the determinants of the utilization of RHS among women of reproductive age in South Sudan's public health facilities holds significant implications for understanding and improving the reproductive health landscape in the region. By investigating the factors influencing the utilization of RHS, the study seeks to identify barriers and facilitators that impact women's access to essential reproductive health services. The implications extend to the potential improvement of healthcare policies, the design of targeted interventions, and the overall enhancement of reproductive health outcomes for women in the region. This chapter delves into the relevant literature concerning the determinants of uptake and utilization of RHS and presents the theoretical and conceptual framework guiding the study.

### **2.2 Empirical Literature Review**

The section was further divided into the following sub-sections: factors influencing utilization of RHS, the association between climate change and utilization of RHS, the association between

sociocultural factors and utilization of RHS, the association between health facility characteristics and utilization of RHS, the influence of health workforce on utilization of RHS, and summary of literature and research gaps.

### **2.2.1 Overview of Reproductive Health and Utilization of Reproductive Health Services**

Attaining universal access to SRHR is a fundamental element in realizing the objectives of SDGs 3 and 5. Despite progress made through various interventions across African countries, the region continues to lag behind global standards, necessitating increased efforts to achieve this crucial goal (Alamneh et al., 2022). The WHO Reproductive Health Strategy, sanctioned by the World Health Assembly in 2004 and guided by internationally agreed human rights principles, delineates five essential dimensions of SRH. These include enhancing antenatal, perinatal, postpartum, and newborn care; delivering high-quality family planning services, including infertility care; eradicating unsafe abortion practices; addressing sexually transmitted infections, including HIV, reproductive tract infections, cervical cancer, and other gynaecological morbidities; and advocating for sexual health (He et al., 2021).

The RH Strategy of the World Health Organization, endorsed by the World Health Assembly in 2004 and guided by universally agreed human rights principles, outlines five essential dimensions of SRH. These include improving antenatal, perinatal, postpartum, and neonatal care; providing high-quality family planning services, including infertility care; eliminating unsafe abortion practices; preventing and managing sexually transmitted infections, including HIV, reproductive tract infections, cervical cancer, and other gynaecological health issues; and promoting sexual health (WHO Africa, 2020). Additionally, the strategy emphasizes the importance of both

preventing and addressing violence against women as a means to enhance reproductive health outcomes.

Progress has been achieved in the European Region with the adoption of modern contraceptive methods, with the contraceptive prevalence rate rising from 55.6% in 2000 to 61.2% in 2015. However, there is still a lack of information for many individuals on topics such as sexuality, family planning, pregnancy and childbirth, sexually transmitted infections, infertility, cervical cancer prevention, and menopause (Kruk et al., 2018). Additionally, the European Region faces numerous challenges, including complications during pregnancy and childbirth, unsafe abortions, reproductive tract infections, incidents of sexual violence, and avoidable deaths of women from cancer.

Contraception and abortion present significant challenges in Asia. As of 2017, nearly 132 million women of reproductive age in Asia face an unmet need for modern contraception, resulting in an estimated 53.8 million unintended pregnancies annually. Alarmingly, about 65% of these unintended pregnancies end in abortion (Center for Reproductive Rights, 2021). The majority of these abortions are concentrated in South and Central Asia, encompassing countries like India, and Eastern Asia, including China. While the exact proportion of unsafe abortions in Asia remains unknown, an estimated 4.6 million women in Asia (excluding Eastern Asia) seek treatment each year for complications arising from unsafe abortion (Guttmacher Institute, 2017).

In most countries across Asia and the Pacific, rates of adolescent childbearing have witnessed a significant decline over the past two to three decades. Despite this positive trend, South and South-West Asian nations continue to grapple with high teenage pregnancy rates, notably reaching 35% in Bangladesh and 21% in Nepal and India. South Asia, in particular, stands out for its alarming

prevalence of child marriage globally, with 45% of women aged 20 to 24 reporting that they were married before turning 18, and nearly one in five girls (17%) being married before reaching the age of 15 (Center for Reproductive Rights, 2021).

Women in the African Region confront a heightened risk of mortality attributed to communicable diseases, maternal and perinatal conditions, and nutritional deficiencies compared to their counterparts in other regions. Notably, a significant global health concern is the prevalence of anemia, affecting an estimated 468 million women aged 15–49 years worldwide, constituting 30% of all women. Iron deficiency is a key contributor to this issue, with a substantial proportion of these anemic cases concentrated in Africa, accounting for 48–57% of the global total (Alamneh et al., 2022). Furthermore, women in the African Region contend with multifaceted challenges that impact their health outcomes. Gender inequity, female poverty, limited economic resources, and pervasive issues such as sexual and gender-based violence, including the practice of Female Genital Mutilation (FGM), collectively act as significant impediments to advancing women's health in the African context (Kruk et al., 2017).

Africa constitutes approximately one-tenth of the global population, contributing to 20 per cent of worldwide births. However, despite this demographic significance, almost half of the mothers facing mortality during pregnancy and childbirth come from the African region. As indicated by WHO Africa (2020), insufficient reproductive health services contribute to around 18 per cent of the global disease burden, with women of reproductive age bearing a substantial 32 per cent of this burden. A crucial factor underlying this situation is the limited access to essential reproductive health interventions, particularly family planning. Despite the well-established advantages of family planning, there are unmet needs in Sub-Saharan Africa (SSA), with only 13 per cent of

married women estimated to use contraceptives. The total fertility rate stands at 5.5 children per woman in SSA, underscoring the challenges in this region. Consequently, Africa faces the highest adult lifetime risk of maternal death (1 in 26), in stark contrast to developed countries with the lowest risk (1 in 7,300) (Cullinan, 2021).

Aligned with the narrative of economic advancement, the past two decades have witnessed significant improvements in health outcomes. Notably, key health indicators, including maternal mortality, neonatal mortality, infant mortality, and stunting in children under five, have demonstrated substantial enhancements over the last 20 years (World Bank, 2018). Access to RHS, such as a minimum of four or more antenatal visits and contraceptive prevalence among women aged 15 to 49 who are in a union, has also experienced a marked increase in Sub-Saharan Africa (Cullinan, 2021). Furthermore, data from 27 Sub-Saharan African countries with two Demographic and Health Survey (DHS) data points indicate a notable rise in the median proportion of health facility births, escalating from 44% to 57% between the initial and the most recent survey (Udo & Doctor, 2016).

Aligned with global patterns, East Africa grapples with persistent challenges in ensuring access to SRHS, posing an enduring public health concern. Maternal mortality rates in this region vary from 224 to 510 per 100,000 live births, indicating a substantial burden of maternal mortality, particularly when compared to rates in developed countries (Omer et al., 2021). Notably, the adoption of modern contraceptive methods is markedly low, with only 27.5% of married women in Uganda and 33.5% in Tanzania utilizing such methods. Furthermore, in Kenya and Tanzania, approximately 20% of married women aged 15-49 have unmet family planning needs, with this figure escalating to 30% in Uganda (He et al., 2021).

Addressing the prevalence of unmet contraceptive needs among adolescent girls stands as a significant concern in the East Africa region, with figures ranging from 38.6% to 66.9% (Sumankuuro et al., 2018). The consequences of unmet family planning requirements are particularly impactful for adolescents, potentially leading to unwanted pregnancies, unsafe abortions, and increased risks of morbidity and mortality. Furthermore, teenage pregnancies frequently result in school dropout, diminishing future employment opportunities for girls and perpetuating the cycle of poverty (Morris & Rushwan, 2015).

In the domain of governance, the persistent lack of capacity poses a substantial challenge to the effective implementation of essential health services and governmental policies, a concern consistent with findings from various reports and studies (Integrity, 2018; Miyake et al., 2017; Erismann et al., 2019). Despite significant financial investments aimed at capacity-building, there has been a noticeable absence of tangible progress. Scholars have characterized South Sudan as caught in a "capability trap," involving two key notions: the application of standardized practices to pre-defined issues and a mismatch between the government's capacity and the expectations for implementing even the most fundamental services (Alamneh et al., 2022). The reliance on imported mechanisms and approaches by donor agencies aligns with this capability trap concept and may contribute to the ongoing challenges in enhancing the government's capacities in South Sudan.

A study conducted in South Sudan by Kane et al. (2016) revealed that both women and men place great importance on the notion of having children. Conceiving after marriage is widely viewed in a positive light, and there is a prevalent belief across genders and age groups that pregnancy is perceived as 'God's will.' Another commonly shared perspective, particularly among the older

generation, is the desirability of having as many children as possible, with the notion that it is a woman's responsibility to bear children. The study conducted by Kane et al. (2016) further underscores that women's acceptance of culturally ingrained expectations reflects the extent to which they can exercise autonomy in determining their reproductive choices. Furthermore, with the return of peace in South Sudan, new opportunities have arisen. Young men and women acknowledge evolving economic circumstances and understand the importance of investing in children's education. They recognize the necessity of having only as many children as they can afford to provide a quality education for, signifying a shift in perceptions and priorities.

Nevertheless, the persistent challenge lies in ensuring that the realization of the uptake and utilization of RHS in South Sudan does not remain elusive, as has been the case with many other health initiatives formulated by the government in the past. For instance, the ongoing violence in South Sudan has led to significant economic and social repercussions. The health budget has witnessed a substantial decline, and the population is grappling with a high level of inflation, as highlighted in a report from Integrity (2018). Furthermore, in January 2018, the Integrated Food Security Phase Classification (IPC) reported that an alarming 48% of South Sudan's population was experiencing acute food insecurity (IPC, 2018). A report from Integrity (2018) assessing the contribution of the Health Pooled Fund (HPF) to strengthening the health system underscored that the United Nations agencies' humanitarian response plan, amounting to 1.7 billion USD for South Sudan, was inadequately funded, with less than a quarter of the required resources secured. This economic crisis has placed increased pressure on programs funded by donors, including those related to RHS.

## 2.2.2 Weather Season and Utilization of Reproductive Health Services

The disproportionate impact of seasonal weather variations on the overall health, social well-being, and economic status of girls and women has been extensively documented. Despite the limited availability of comprehensive climate-related gender-disaggregated data in many countries, research indicates that women and children are up to 14 times more likely than men to suffer fatalities in the aftermath of disasters, including extreme weather events such as hurricanes, wildfires, and flooding (Sorensen et al., 2018; Zeid et al., 2015). It's crucial to acknowledge that the comparative mortality rates may vary depending on specific contextual factors.

The influence of weather seasonality appears to be particularly linked to certain aspects of the uptake and utilization of RHS. There is substantial evidence establishing a connection between climate change and adverse maternal health outcomes, an increased prevalence of GBV, and a general lack of access to RHS, subsequently impacting family planning, abortion, and STI outcomes (Women Deliver, 2021). In the absence of adequate disaster-risk management, climate-related disasters can directly result in disruptions that impede access to RHS and supplies. Extreme weather events, including storms, floods, and wildfires, can cause physical damage to health facilities and infrastructure, leading to interruptions in medical supply chains and the loss of medical records (Benjamin, 2016).

When health facilities and supply chains are compromised, there is an immediate and direct negative impact on the access to and quality of RHS. This includes critical services such as post-exposure prophylaxis for HIV, HIV treatment, emergency contraception, and safe abortion services (Onyango & Heidari, 2017). For instance, in Bangladesh, the increasing incidence of flooding has resulted in low stocks of contraceptives at health facilities in rural and remote areas

(Asian-Pacific Resource & Research Centre for Women, 2014). Research in Thailand revealed that pregnant women displaced due to flooding had infants with significantly lower birth weights than those born to non-displaced women. Birth weight increases with perceived social support, which could be compromised during displacement (Sanguanklin et al., 2014).

The repercussions on RHS persist long after a climate event occurs. Disruptions in health services can compromise access to contraceptives, maternal and child care treatments, testing for HIV infections and other STIs, counseling, psychosocial support, abortion services, and post-abortion care for communities affected by crises (Benjamin, 2016). Elevated rates of STIs can lead to enduring health implications for women, including infertility, tubal or ectopic pregnancy, cervical cancer, and perinatal or congenital infections in infants born to affected mothers (Behrman & Weitzman, 2016). Additionally, reduced access to contraception can result in higher rates of unintended pregnancies, pregnancy complications, and maternal deaths during childbirth (Behrman & Weitzman, 2016).

In the aftermath of natural or man-made crises, a common repercussion is the disruption of governance, support systems, and services, with detrimental effects on the SRHR of girls and women. Events such as conflicts, natural disasters, and global pandemics have the potential to weaken health systems, amplifying vulnerability to the impacts of climate change (Plesons et al., 2019). Consequently, these vulnerabilities create gaps in the access, availability, acceptability, and quality of RH information and services (Castro, 2020). When coupled with heightened fear, stigma, and harmful social norms in post-disaster settings, these factors can lead to worsened utilization of RHS.

Populations in numerous economically disadvantaged and climate-vulnerable countries are undergoing rapid growth. Human fertility and reproductive health outcomes, which are integral components of population growth, are influenced by a range of factors encompassing individual, household, community, country, and regional characteristics. In the poorest countries and communities, fertility and reproductive health outcomes are also shaped by climate and weather conditions (Kathryn Grace, 2017). The interplay between these factors adds complexity to the challenges faced by vulnerable populations in achieving optimal reproductive health outcomes.

Most of the globe's impoverished households, particularly those in sub-Saharan Africa, depend significantly on small-scale, rain-fed agriculture and livestock systems, as opposed to large-scale mechanized systems (Brown, 2015). As a result, when the rainy season encounters difficulties, such as delayed starts, erratic patterns, or the complete absence of rains, it has a profound impact on both short- and long-term food availability and economic resources (Hertel, 2016). These effects manifest in diverse outcomes relevant to studies on RH, encompassing changes in sexual behavior and coital frequency, variations in sperm quality, adjustments in birth and fertility goals and planning, heightened risks of miscarriage, stillbirth, and abortion, implications for psychological well-being, and broader consequences for maternal and child health (Kathryn Grace, 2017).

Furthermore, the direct consequences arising from the interplay between climate and the natural environment, including events like droughts, floods, heatwaves, and other climatic phenomena, can significantly impact the adoption of RH outcomes and access to health services (Grace et al., 2015). The intricate interplay of these factors highlights the diverse ways in which climate-related

changes can impact reproductive health, extending beyond individual and familial aspects to broader implications for community and regional well-being.

As per the United Nations Population Fund (UNPF) (2021), a significant number of individuals in South Sudan are grappling with the harsh consequences of disrupted households and livelihoods, along with the loss of livestock and crops due to severe droughts. During disasters, health services such as sexual and reproductive health services (SRHS) are often constrained and sometimes unavailable, leading to instances where women give birth without essential medical support. Moreover, the ability of women and girls to manage their menstruation with dignity is compromised in the absence of clean water and menstrual products. United Nations High Commissioner for Refugees (UNHCR) Africa (2022) further emphasizes that climate change-induced flooding and drought pose a threat to exacerbate an already precarious situation in vulnerable parts of South Sudan. For instance, in 2021, South Sudan experienced the most severe flooding on record. Such events are anticipated to become more frequent and are likely to impact the utilization of reproductive health services in public health facilities.

As reported by the World Health Organization South Sudan (2020), Sudan has witnessed a decline in maternal mortality rates, dropping from 744 per 100,000 live births in 1990 to 311 in 2015. However, women and girls in climate-affected areas face challenges in accessing crucial government health services, supported by donor funding, which have played a role in this reduction. Unfortunately, there is no recent data available on maternal mortality for the region. Still, a collaborative research initiative between the UN and the Sudanese government in 2006 revealed that the maternal mortality rate in climate-affected areas was 503 per 100,000 live births,

compared to 91 per 100,000 births in other regions not experiencing climate change-driven flooding and drought.

### **2.2.3 Socio-Cultural Factors and Utilization of Reproductive Health Services**

Geary et al. (2014) expound on individual barriers, which include factors such as incomplete or inaccurate knowledge regarding SRH, encompassing the perpetuation of myths and misconceptions about contraception. These barriers also involve limited self-efficacy and individual agency, as well as constraints on one's ability to navigate internalized social and gender norms. Additionally, they encompass the lack of access to information detailing available SRH services and where to access them. In a study conducted by Ninsiima et al. (2021), fourteen investigations primarily focused on evaluating individual barriers, including aspects related to knowledge, individual perceptions, shame, and stigma impacting RHS. Findings from studies assessing RHS utilization levels indicated that only 38.5% of adolescents in South Africa and 21.5% in Ethiopia possessed adequate knowledge about the range of RHS services available. Furthermore, youths lacking knowledge about various RHS options were less inclined to utilize these services compared to their informed counterparts, as observed in studies conducted by Binu et al. (2018) and Helamo et al. (2017).

Socio-cultural norms and gender stereotypes have been identified as influential factors shaping the uptake and utilization of RHS (Sumankuuro et al., 2018; Mafuta et al., 2018). This influence is believed to stem from the impact of gendered social roles, the dynamics of vulnerability inherent in existing social structures, and negative sociocultural norms (Lodenstein et al., 2018; Pell et al., 2011). The resulting impact is reflected in attitudes and behaviours that affect the uptake of RH services, such as contraceptive services, as well as perceptions of what constitutes a normal RH

program, ultimately influencing decision-making regarding the choice of RHS (Sumankuuro et al., 2017).

Gendered social roles play a crucial role in shaping the extent of men's involvement in sexual and reproductive health-related matters. These gender dynamics also dictate the degree of autonomy women have in making decisions about their health (Yamin et al., 2015). In numerous communities throughout sub-Saharan Africa, where patriarchal structures prevail, men frequently assume the primary decision-making role, thereby directly or indirectly affecting women's ability to access and make use of health services (Mkandawire & Hendriks, 2018). In contrast, women grapple with societal attitudes and expectations that place them at an unjust health disadvantage.

In a study conducted in Kenya by Mochache et al. (2020), the investigation aimed to assess the impact of individual and community-level factors on the utilization of maternal health services. Purposive sampling was employed, including female (pregnant and postpartum) and male adult community members. The research utilized a thematic content analytic approach, revealing that religious and socio-cultural norms, along with gender stereotypes, played significant roles in influencing the uptake and utilization of maternal health services, encompassing facility-based delivery and contraception.

In a separate research initiative in Kenya, Kinaro et al. (2019) focused on determining the determinants affecting the utilization of SRHS among adolescents and youths aged 10 to 24 years. Employing a qualitative and purposeful study design, socio-cultural factors were identified as influential in shaping the utilization of SRHS and information. Factors such as early marriage, youth status, male-exclusive decision-making on sexuality matters, and fears related to family

dynamics were found to contribute to unprotected sex, while myths and misconceptions about contraceptives impacted utilization.

Despite substantial evidence supporting guidelines for the provision of RHS, research indicates a persistent gap in translating these guidelines into reproductive health practice. In a qualitative investigation in South Sudan, Kane et al. (2016) examined the impact of gendered social dynamics within the Fertit community on women's ability to control their reproductive choices and, consequently, their Sexual and Reproductive Health (SRH). The findings revealed that women, across various age groups, face limited options as they contend with the expectations imposed by their husbands and families regarding childbearing. Women, both young and elderly, expressed frustration about the perceived shortcomings of men and society at large, leading them to bear the primary burden of reproductive responsibilities.

Notably, in Sub-Saharan Africa, approximately 17% of all women and 23% of married or in-union women have an unmet need for family planning (United Nations, 2019). These women express a desire to delay or stop childbearing but are not using any form of contraception, putting them at a higher risk of unplanned pregnancies or closely spaced childbirth. Only about 28% of married or in-union women aged 15–19 in the region use modern family planning methods, and 52% have their demand for family planning satisfied by modern methods (WHO Africa, 2020).

Literature evidence indicates that interventions solely targeting individual motivation and behavior change have limited effectiveness (Mochache et al., 2020). Women in impoverished regions, due to their vulnerable status, often have minimal control over engaging in high-risk behaviors. Their risk behaviors and access to Reproductive Health (RH) services are significantly shaped by socio-cultural factors (Sumankuuro et al., 2018). While the connection between socio-cultural factors

and RH is well-acknowledged in the literature, it has received insufficient attention in the local context. A deeper understanding of these factors is essential for the Government and other service providers to effectively comprehend and address the socio-cultural influences impacting the uptake of RHS.

Socioeconomic barriers, as outlined in the comprehensive definition provided by Geary et al. (2014), represent a broad spectrum of impediments that hinder individuals born into lower socioeconomic strata from advancing along the path to accessing improved RHS comparable to those available to more affluent individuals. Research findings consistently indicate a prevailing preference among people for low-cost or no-cost RHS when they seek such services. Transport expenses and the issue of extended travel distances, as highlighted by Self et al. (2018), also emerge as significant barriers. Similarly, a parallel study conducted in Uganda (Atuyambe et al., 2015), along with investigations in Kenya (Akinyi, 2014) and Nigeria (Ayehu et al., 2016), yielded concordant results, with adolescents expressing that, in cases where services were not offered for free, the associated costs remained beyond their means.

In South Sudan, Kane et al. (2016) discerned that the altered political and economic landscape following the post-conflict period, coupled with the restoration of peace, has the potential to serve as a catalyst for shifts in prevailing norms. This transition to a state of peace, marked by South Sudanese society's transformation from a militarily dominated, male-centric structure to a community now oriented towards nation-building and aspiring for progress, brings with it the prospect of improved access to information, services, and the utilization of RHS. For instance, Kane et al. (2016) underscored that women's access to family planning services is contingent on

obtaining consent from their husbands, highlighting the pivotal role played by injunctive social norms regarding marriage and childbearing in shaping the utilization of RHS in South Sudan.

#### **2.2.4 Health Facility Characteristics and Utilization of Reproductive Health Services**

As suggested by Geary et al. (2014), structural barriers encompass a range of factors such as legal and policy requirements mandating parental or partner consent, the proximity of health facilities, the associated costs of services and transportation, extended waiting times for services, inconvenient operating hours, the availability of essential supplies at healthcare facilities, and the assurance of privacy and confidentiality. A review of prior studies from South Africa and Ethiopia highlights that structural barrier, particularly with respect to adolescent access to healthcare, predominantly pertain to provider attitudes and the clinical environment (Motuma et al., 2016; Mulaudzi et al., 2018). It is worth noting that the disposition of healthcare workers can significantly impede adolescents' utilization of Reproductive Health Services (RHS). For example, the provision of RHS should ideally occur within a youth-friendly setting, staffed by healthcare professionals who are both welcoming and supportive in their interactions with adolescents seeking care (Ninsiima et al., 2021).

The factors influencing the adoption of Reproductive Health Services (RHS) can be categorized into individual, organizational, and contextual dimensions. Individual factors pertain to the characteristics of authoritative figures within the organization or health facility. Organizational factors relate to the structure and operational aspects of the health facility. Contextual factors encompass characteristics of the policy and regional environment in which the health facility is situated (Latigo, 2010).

Presently, a significant portion of healthcare interventions takes place at the household and community levels. Growing evidence supports the effectiveness of community health workers, who not only play a crucial role in health education and disease prevention but also contribute significantly to treatment (Sacks et al., 2019). Frameworks that align more closely with this healthcare landscape will provide greater utility to policymakers, facilitating improved planning and resource allocation in areas where they can have the most substantial impact.

Different dimensions contribute to the characteristics of health facilities, including quality of care. Accepted methods and indicators are available for assessing these dimensions, although ongoing research seeks to refine them (Starrs et al., 2018). Some characteristics, such as person-centeredness, are in the early stages of research and dialogue to determine what and how to measure them effectively. Certain concepts widely used to measure health facility characteristics remain highly relevant and are key components. Terms like access, availability, utilization, and coverage are often used interchangeably to assess whether people are receiving the services they require (Sacks et al., 2019).

According to WHO (2010), access to health facility services is a comprehensive term encompassing various dimensions. The comprehensive measurement of access requires a systematic assessment of the physical, economic, and socio-psychological aspects of people's ability to utilize health services. Availability, as an aspect of comprehensiveness, refers to the physical presence or delivery of services that meet a minimum standard. Utilization, on the other hand, is defined as the quantity of health care services used. Coverage of interventions is defined as the proportion of people who receive a specific intervention or service among those who need it.

Research indicates that health facility characteristics have been significantly impacted in South Sudan, as the government is responsible for both healthcare and health facility funding but possesses limited capacity for financial support. Consequently, the provision of reproductive health services relies heavily on external funding from international organizations and foreign governments. International donors, while expressing concerns about the level of fiduciary responsibility and accountability within the Ministry of Health (MoH), have continued to provide support to the health system (Miyake et al., 2017; Downie, 2012; Knopf, 2013). For example, in February 2019, the World Bank granted 105.4 million USD to enhance the reproductive health system (World Bank, 2019). However, experts argue that while external funding is essential, it further challenges the MoH's ability to exercise independent governance and stewardship (Cometto et al., 2010).

The study conducted by Kane et al. (2016) in South Sudan revealed that family planning, including access to condoms, is largely unavailable in the majority of the states. This is primarily due to overall gaps in health infrastructure and services and, in part, because the major healthcare provider does not offer contraception. Consequently, women are unable to control the number and spacing of their pregnancies or plan their families, either individually or together with their partners, to the detriment of their well-being and health. Another study in South Sudan found that women and girls have limited or no options for controlling their fertility, and overall access to Reproductive Health (RH) information and services is weak. Notably, some of the largest hospitals and main health centers in South Sudan are run by Catholic providers who do not provide contraception (Kane, Rial, et al., 2016). Additionally, limited quantities of contraception are subject to local rules and cultural norms, requiring women to seek permission from their husbands.

The study further highlighted that many women and girls in South Sudan live too far away to access emergency care or reside on the other side of conflict frontlines, making it hazardous to travel to healthcare facilities. In such circumstances, most pregnant women must rely on local birth attendants with no formal training or trained midwives who have been unable to acquire new or sterile equipment since the conflict began. Women and girls facing complications during labor may need to travel for days, often on dangerous routes, including across frontlines, to access emergency obstetric care (Kane, Kok, et al., 2016). In conflict-affected areas, RHS is generally not available, except in rare instances.

Research has identified several common barriers to the provision of health services to young people, including reproductive health services (RHS). These barriers are often linked to a shortage of staff with training in RHS provision and the absence of dedicated spaces for young people within healthcare facilities (Ayehu et al., 2016; Motuma et al., 2016). Additionally, operational barriers in health facilities, such as inconvenient operating hours, transportation limitations, and high service costs, significantly affect the access and utilization of RHS (Binu et al., 2018; Ajike, 2016).

### **2.2.5 Health Workforce and Utilization of Reproductive Health Services**

The enhancement of health systems is shaped by six fundamental building blocks, each contributing uniquely to improving the overall effectiveness of the healthcare system. Leadership/governance and health information systems, functioning as cross-cutting components, serve as foundational elements that govern and regulate all other facets of the health system (WHO Europe, 2021). Key input components to the health system include financing and the health workforce. A third category, consisting of medical products and technologies and service delivery,

reflects the immediate outputs of the health system, encompassing the availability and distribution of care (WHO, 2010a).

A country's capacity to achieve its healthcare objectives is significantly contingent on the competence, expertise, dedication, and distribution of healthcare personnel responsible for the coordination and provision of healthcare services. Extensive research has provided substantial proof of a direct and favorable correlation between the quantity of healthcare professionals and the health outcomes of the population (WHO, 2010a). Numerous nations, for various reasons, confront shortages in the healthcare workforce necessary for administering vital health interventions. These challenges may arise from factors such as restricted production capacity, the migration of healthcare professionals both domestically and internationally, an inadequately balanced distribution of skills, and demographic disparities. The process of shaping national policies and strategies to advance human resources for health necessitates the utilization of robust data and evidence. In response to the growing demand for comprehensive information, establishing knowledge repositories and databases concerning the healthcare workforce mandates intersectoral coordination (WHO, 2010b).

The health workforce is defined as "all people engaged in actions whose primary intent is to enhance health." This encompasses clinical staff such as physicians, nurses, pharmacists, and dentists, as well as management and support staff—those who don't directly deliver services but are essential to the functioning of health systems, including managers, ambulance drivers, and accountants (Rolewicz & Palmer, 2019).

At present, there is a lack of comprehensive and robust methodologies for assessing the adequacy of the health workforce in addressing the healthcare needs of a specific population. However, signs

of a health workforce shortage may include insufficient numbers and inadequate skills mix among those being trained, as well as challenges related to the distribution of these professionals. Losses due to factors like death, retirement, career changes, or out-migration further contribute to workforce shortages. Countries that have fewer than 23 physicians, nurses, and midwives per 10,000 population are likely to face challenges in achieving satisfactory coverage rates for essential primary health-care interventions, as stipulated by the MDGs (WHO, 2010b).

The health system is a comprehensive framework that intersects with various elements such as service delivery, workforce, financing, leadership, and medication, among others. South Sudan, recognized as a fragile state, grapples with challenges related to the utilization of RHS. In a recent study conducted by Belaid et al. (2020), essential reproductive, maternal, newborn, child, and adolescent health (RMNCAH) policies were scrutinized. An assessment of the existing status of the World Health Organization (WHO) health system building blocks was conducted to identify impediments to RMNCAH policy implementation. The study's findings revealed that gaps in RH service utilization primarily stem from deficiencies within various health system building blocks, with a particular focus on the healthcare workforce. Notably, the identified bottlenecks encompass a critical shortage of human resources across different health system components and levels, a scarcity of essential medicines and supplies, and limited national funding support.

In South Sudan, research conducted by Kane, Kok, et al. (2016) revealed that pregnant women face severely restricted access to skilled health providers, essential vitamins, necessary medicines, quality antenatal care, and emergency obstetric services. These limitations heighten the risk of injury or death resulting from complications during pregnancy and childbirth. Another study, utilizing population estimates from humanitarian groups operating in the region and WHO

estimates for South Sudan's overall birth rates (without regional breakdown), approximated that approximately 33,500 births occur annually. However, challenges related to insecurity, leading to a shortage of staff, have hindered women from accessing essential care, including attending antenatal visits. Additionally, Human Rights Watch highlighted the significant lack of access to contraception for women and girls, posing challenges in preventing pregnancies and STIs.

### **2.2.6 Summary of Literature and Research Gaps**

The existing literature highlights the significant impact of socio-cultural factors on sexual and reproductive health behavior, as well as access to health services. Understanding norms and positive values influenced by socio-cultural factors is crucial for leveraging them as effective tools to promote the uptake and utilization of RHS. While there is limited research explicitly linking socio-cultural factors to the uptake and utilization of RHS, some studies have explored the broader socio-cultural impacts on SRH. However, these studies have not explicitly identified socio-cultural factors influencing the uptake and utilization of RHS, creating a gap that the current study aims to address.

The literature emphasizes the usefulness of the WHO's health system building blocks as valuable tools for assessing the strengthening of health systems. These six essential blocks, including health workforce and service delivery, offer a framework to identify opportunities for enhancing the uptake and utilization of RHS. For instance, a study conducted by Manyazewal (2017) in Ethiopia assessed the current status of the six WHO health system building blocks within public healthcare facilities. The study found that the overall performance of public hospitals fell below the minimum required score of 80%, reaching only 60% when assessed against the WHO building blocks. Specific performance scores for each building block varied, with information at 53%, health

workforce at 55%, medical products and technologies at 58%, leadership and governance at 61%, healthcare financing at 62%, and service delivery at 69%.

While there is substantial literature supporting the guidelines for the provision of RHS, there is a dearth of research on the determinants of the uptake and utilization of RHS. Existing literature on this topic, especially in the region, has primarily focused on the country level rather than the sectoral level. Few studies have directly linked health system building blocks, such as service delivery and health workforce, with the uptake of RHS. This suggests a lack of comprehensive studies examining the determinants of the uptake and utilization of RHS in the health sector, particularly within the local context. Therefore, this study will specifically use health facility characteristics and health workforce determinants as proxy measures for the uptake and utilization of RHS in South Sudan's health sector.

Furthermore, estimates of population growth affected by climate change frequently neglect the potential implications of climate variations on the uptake and utilization of RHS. A common and mistaken assumption is that there are no biologically or behaviorally pertinent reactions to climate change, except for migration, leading to an oversimplified standard approach. However, elements related to the uptake and utilization of RHS, such as population size, composition, and growth rate, can profoundly impact a community's ability to adjust to a shifting climate. Hence, these factors should be taken into account in discussions about future scenarios.

### **2.3 Theoretical Framework**

For behavioural and policy interventions to achieve their intended outcomes, it is crucial to ground them in a solid understanding of the underlying mechanisms and processes. In this study, we draw

primarily from two well-established theoretical frameworks, namely the Health Belief Model (HBM) and the Theory of Reasoned Action (TRA). These two theories have found widespread application in studies aiming to elucidate and anticipate the utilization and acceptance of reproductive health services. They have exhibited their efficacy in numerous empirical investigations. However, there remains a paucity of studies that have pitted these theories against each other to ascertain their predictive power regarding overall behaviors associated with reproductive health service utilization.

### **2.3.1 Health Belief Model**

The HBM stands out as one of the most commonly employed theoretical frameworks in the realm of health behaviours. Originating in the 1950s, a team of social psychologists developed and initially tested the HBM as a systematic approach to elucidate why individuals were not seeking chest x-rays for the early detection of tuberculosis (TB). Over time, the model's scope has expanded beyond predicting preventive behaviours to encompass applications in understanding sick role behaviours, health-risk behaviours, and the utilization of health services (Rural Health Information Hub, 2022).

In the context of instilling a new behaviour or modifying an existing one, the HBM proposes that the individual's decision-making process revolves around distinct and subjective beliefs. These include perceived susceptibility, perceived severity, perceived benefits, perceived barriers, and cues to action (Green et al., 2020).

Regarding perceived susceptibility, it is emphasized that the acknowledgement of vulnerability to a risky condition varies widely among individuals. Experts highlight that the perception of threat

plays a crucial role in motivating an individual to adopt a health behaviour to prevent adverse condition. As for perceived severity, the level of seriousness of the consequences may be influenced by the emotional response arising from the assessment of the health problem and its repercussions. This cognitive appraisal may encompass medical complications and the impact of the health problem on the individual's family life, financial situation, and social relations (Green et al., 2020).

The perception of benefits, which is a component of behavioral evaluation, is a personal belief that pertains to the perceived effectiveness of adopting a specific behavior to avert a health threat. Consequently, the preventive action might not be undertaken unless the individual perceives significant benefits from taking that action. Moreover, the "cues to action" function as triggering mechanisms to activate behavior and may encompass physical symptoms, mass media communications, interpersonal interactions, advice from others, health education campaigns, and reminder postcards from physicians (Rural Health Information Hub, 2022).

As mentioned before, perceived barriers constitute another element of behavioral evaluation. Even when a particular action would be beneficial in preventing a health problem, individuals may perceive challenges in executing the behavior. These challenges are seen as barriers, representing the negative aspects associated with performing the health behavior. Barriers may encompass aspects of a health behavior that are inconvenient, time-consuming, expensive, unpleasant, painful, or upsetting (Green et al., 2020). Such barriers can hinder the motivation to engage in reproductive health behavior, including policy implementation.

The HBM's four constructs—perceived barriers, benefits, susceptibility, and severity—were employed to construct a predictive model for risky sexual practices in college students. The

findings indicated that these constructs effectively accounted for 18% of the variance in the total number of risk behaviors and 22% of the variance in multiple sexual partnerships. However, they were unable to predict condom usage in college women (Green et al., 2020). The HBM demonstrated its potential as a useful theoretical framework for understanding the adoption and utilization of RH services.

The HBM serves as a widely acknowledged theoretical framework in the realm of health behavior, offering valuable insights into the factors influencing the uptake and utilization of RHS. Examining the model's constructs in detail provides a nuanced understanding of individual perceptions, motivations, and barriers related to reproductive health.

***Perceived Susceptibility and Severity:***

Understanding how individuals perceive their vulnerability to reproductive health risks (perceived susceptibility) and evaluating the seriousness of the consequences (perceived severity) can shed light on their motivations to engage in health behaviours. In the context of reproductive health, this could include how individuals perceive the risks associated with inadequate family planning, unsafe abortions, or the spread of sexually transmitted infections.

***Perceived Benefits:***

Examining the perceived benefits of adopting specific reproductive health behaviours helps in understanding individuals' motivations. For instance, if individuals recognize the benefits of family planning, safe sexual practices, or regular reproductive health check-ups, they are more likely to engage in these behaviors. This insight can inform targeted interventions to emphasize the positive outcomes of reproductive health practices.

### ***Perceived Barriers:***

Identifying perceived barriers is crucial in recognizing obstacles that individuals may face in accessing and utilizing reproductive health services. Barriers could include factors such as lack of awareness, financial constraints, cultural stigmas, or logistical challenges. Addressing these barriers is essential for improving service utilization.

### ***Cues to Action:***

Recognizing the triggers or cues that prompt individuals to take action towards reproductive health is essential. This could involve understanding how information, interpersonal interactions, or healthcare campaigns influence individuals to seek reproductive health services. Utilizing effective cues to action can enhance the likelihood of individuals adopting positive reproductive health behaviours.

### ***Application to Risky Sexual Practices:***

Applying the HBM to assess risky sexual practices among college students provides a specific focus on the factors influencing these behaviours. Understanding the interplay of perceived susceptibility, severity, benefits, and barriers can guide interventions aimed at reducing risky sexual behaviours. Insights gained from the model can be used to tailor educational campaigns or support services for this specific demographic.

### ***Limitations and Areas for Further Research:***

The study's finding that the HBM constructs explained certain variances in risk behaviors but not in condom usage among college women suggests potential limitations or unique factors at play.

This highlights the need for further research to explore additional determinants or contextual factors that may influence specific reproductive health practices.

In summary, the HBM offers a comprehensive framework for exploring the psychological and contextual factors influencing reproductive health behaviors. Applying the HBM to the study's main objective provides a systematic approach to understanding and addressing the complexities of reproductive health service uptake and utilization.

### **2.3.2 Theory of Reasoned Action**

Originating in 1967, the TRA emerged within the realm of social psychology. In the 1970s, social psychologists directed their focus towards the exploration of the term "attitude" and sought to unravel the connection between attitudes and behaviour. The creators of the TRA, observing a weak empirical relationship between attitude and behaviour, proposed a refined definition of "attitude" to encompass a person's evaluation of any psychological object. They asserted that a person's intention should be regarded as the immediate determinant of behavior (Glanz et al., 2015).

The TRA offers a framework for examining attitudes toward behaviors, aiming to predict and comprehend an individual's behavior. Grounded in value expectancy theories, the TRA operates on the assumption that humans are rational decision-makers who consider all available information and potential implications before taking action (Glanz et al., 2015). Building on these premises, the TRA seeks to elucidate the process by which intention translates into behavior, identifying the specific beliefs, attitudes, and subjective norms that impact this transition.

TRA encompasses key components such as behavior, intention, and personal attitude. Behavior is delineated by four elements: the action itself, the target toward which the action is directed, the context in which it occurs, and the timing of its execution. Furthermore, intention stands out as the central determinant of behavior. The theory posits that the stronger an individual's intention is toward a specific behavior, the greater the anticipated success in performing that behavior.

Examining the adoption and utilization of RHS, the study identified a significant correlation between attitudes towards these services and the multiplicative composites of beliefs and outcome evaluations related to the services. Similarly, a noteworthy association was observed between subjective norms and the multiplicative composites of normative beliefs and motivation to comply in their investigation. Regarding the intention to use RHS, the study revealed that both attitudes and subjective norms were influential determinants (Glanz et al., 2015).

The TRA, developed in 1967 within the field of social psychology, offers valuable insights into understanding and predicting individual behavior, particularly in the context of the uptake and utilization of RHS. In the 1970s, as social psychologists delved into exploring the term "attitude" and its relationship with behavior, the TRA emerged as a systematic approach. Recognizing a weak empirical link between attitude and behavior, the creators of the TRA refined the definition of "attitude" and emphasized the pivotal role of a person's intention as the immediate determinant of behavior (Glanz et al., 2015).

The TRA serves as a comprehensive framework for scrutinizing attitudes toward behaviors, with the primary objective of predicting and comprehending individual behavior. Rooted in value expectancy theories, the TRA operates on the assumption that individuals are rational decision-makers who carefully consider available information and potential implications before taking

action. This perspective lays the groundwork for understanding the process by which intention translates into behavior, shedding light on the specific beliefs, attitudes, and subjective norms that influence this transition.

Key components of the TRA, including behaviour, intention, and personal attitude, contribute to its applicability in the study of RHS utilization. Behaviour, defined by elements such as the action, target, context, and timing, becomes a multifaceted determinant influenced by an individual's intention. The theory posits that a stronger intention toward a specific behaviour correlates with a higher likelihood of successful execution.

In the specific context of RHS, the study revealed significant correlations between attitudes and the multiplicative composites of beliefs and outcome evaluations related to these services. This implies that individuals' attitudes toward RHS are intricately linked to their beliefs about these services and the perceived outcomes associated with utilizing them. Additionally, the study found notable associations between subjective norms, encompassing normative beliefs and motivation to comply, and the utilization of RHS. This suggests that social influences and the perceived importance of complying with societal expectations play a role in individuals' decisions to use RHS.

Furthermore, the study highlighted the importance of both attitudes and subjective norms as influential determinants of the intention to use RHS. This underscores the significance of individuals' attitudes and perceptions of social norms in shaping their intention to engage in reproductive health behaviours. Understanding these components within the framework of the TRA provides a nuanced perspective on the factors influencing the adoption and utilization of RH

services, offering valuable insights for policymakers and healthcare providers aiming to promote reproductive health in the studied population.

It is important to highlight that no studies have conducted a comprehensive comparison of the full models of the two theories (HBM and TRA). As a result, there is still no consensus on which theory serves as the most effective model for predicting the outcome behavior of interest, specifically the utilization of RHS behavior, or which constructs within these comprehensive theories are the most robust predictors. Nevertheless, both theories offer a well-defined theoretical framework, providing a roadmap to guide research by aiding in the selection, definition, and measurement of variables, as well as in the interpretation of results. Additionally, these theories share a common conceptual approach, grounded in expectancy-value theory, which posits that individuals are more likely to engage in behaviors associated with high-value expectancy.

## **2.4 Conceptual Framework**

The conceptual framework of this study is meticulously aligned with the specific objectives to provide a comprehensive understanding of the determinants influencing the utilization of RHS among women of reproductive age in South Sudan's public health facilities. Each domain of the framework corresponds to a specific objective, ensuring that the research systematically addresses each aspect of RHS utilization.

### *Objective 1: To Examine the Level of Utilization of Reproductive Health Services*

The first objective focuses on assessing the current level of RHS utilization. This involves gathering and analyzing data on the usage rates of various reproductive health services, including SRH information and education, modern contraceptive services, voluntary counseling and testing

(VCT), and STI diagnosis and treatment services. The framework supports this objective by providing a structured approach to collect and evaluate utilization data over a defined period (2015-2020), allowing for a clear assessment of how extensively these services are being used.

*Objective 2: Relationship Between Weather Seasonality and Reproductive Health Services Utilization*

The second objective examines the impact of weather seasonality on RHS utilization. The framework includes Weather Seasonality as a critical independent variable, focusing on the contrasting characteristics of the dry and wet seasons. By analyzing how temperature extremes and precipitation patterns affect access to and use of RHS, the study aims to identify seasonal barriers to service utilization. This alignment ensures that the research comprehensively captures the influence of environmental factors on health service uptake.

*Objective 3: Sociocultural Factors Influencing Reproductive Health Services Utilization*

The third objective investigates the sociocultural factors that affect RHS utilization. The framework addresses this through a range of variables reflecting the demographic and cultural landscape of the study population, such as sex, age, marital status, residence, wealth index, religion, ethnic group, education level, knowledge about RH services, and media exposure. This alignment allows the study to explore how these sociocultural factors create barriers or facilitators to accessing reproductive health services, providing a nuanced understanding of the social context in which these services are used.

*Objective 4: Influence of Health Facility Characteristics on Reproductive Health Services Utilization*

The fourth objective focuses on how the characteristics of health facilities impact RHS utilization. The framework includes variables such as geographical accessibility, hospital classification, and the availability of modern contraceptive services. By evaluating these aspects, the study seeks to identify specific facility-related factors that either enhance or hinder service uptake. This objective is crucial for understanding the structural and operational barriers within the healthcare system that affect women's access to RHS.

*Objective 5: Influence of the Health Workforce on Reproductive Health Services Utilization*

The fifth objective explores the role of the health workforce in RHS utilization. The framework encompasses variables such as the level of education, cadre or academic qualification, workload, salary, and revenue resources (including NGO affiliation). By examining these factors, the study aims to understand how the capacity, skills, and motivations of healthcare providers influence the delivery and uptake of reproductive health services. This alignment ensures that the research captures the critical human resource dynamics affecting RHS utilization.

*Intervening Variable: National Reproductive Health Policy*

The National Reproductive Health Policy serves as an intervening variable, mediating the relationship between the independent variables and the dependent variable (RHS utilization). This policy framework influences how socio-cultural factors, facility characteristics, and workforce dynamics interact to affect service uptake. By considering this policy context, the study can provide insights into how national policies shape the environment for RHS provision and utilization, aligning the research with broader health policy objectives.

## 2.4.1 Independent Variables

In this study, several independent variables were considered to comprehensively explore the factors influencing the uptake and utilization of reproductive health services (RHS) in South Sudan. The identified independent variables can be categorized into three main domains: Weather Seasonality, Socio-cultural Factors, Health Facility Characteristics, and Health Workforce (see Figure 2.1).

### 2.4.1.1 Weather Seasonality

The data abstraction tool employed in this study is a standardized instrument frequently used to systematically collect data from scientific reports, particularly during the development of the Guide to Community Preventive Services. This tool was instrumental in obtaining utilization data for the proposed study period from 2015 to 2020. The study specifically focuses on weather seasonality as the first independent variable, examining the contrasting characteristics of the dry and wet seasons in selected South Sudan states.

The dry season in South Sudan extends from January to April and is characterized by temperatures consistently exceeding 25°C, with highs often surpassing 35°C. In contrast, the rainy season, which typically prevails from April to November, features significant variations in temperature and precipitation patterns across different locations. By analyzing these seasonal differences, the study aims to understand their impact on the utilization of reproductive health services in South Sudan.

#### *2.4.1.2 Socio-cultural Factors*

The main source of information for the second domain, Socio-cultural Factors, was women of reproductive age. This domain encompasses a range of variables reflecting the diverse demographic and cultural landscape of the study population. These variables include sex, with distinctions made between male and female respondents, and age, which is analyzed through mean, median, and categorized age groups. Marital status is another critical variable, encompassing categories such as single, married, divorced, and widowed.

Residence is considered, differentiating between urban and rural settings, along with the wealth index, which classifies participants into high, medium, and low economic statuses. Religion is another important variable, with categories including Christian, Muslim, Traditional, and Others. Ethnic group focus is primarily on the prominent Dinka, Nuer, and Shilluk groups. Education level is categorized into primary, secondary, college, and no formal education.

Additionally, knowledge about reproductive health services is evaluated and categorized into high and low levels based on participants' scores in relevant knowledge questions. Media exposure on SRH issues is also assessed, determined by encounters with mass media content addressing at least two reproductive health issues in the preceding 12 months. By examining these socio-cultural factors, the study aims to understand their influence on the utilization of reproductive health services in South Sudan.

#### *2.4.1.3 Health Facility Characteristics*

In the third domain, Health Facility Characteristics, women of reproductive age were the primary source of information. This domain includes several key variables that influence the utilization of RHS. One of the primary variables is RHS accessibility, which focuses on the geographical

accessibility of health services as perceived by the respondents. This includes the ease of reaching health facilities and the distance travelled to obtain services.

Another critical variable is hospital classification, which follows a tiered structure. This structure categorizes health facilities into Primary Health Care Units (PHCU), Primary Health Care Centers (PHCC), and Hospitals, providing insights into the levels of care available at different types of facilities. The availability of modern contraceptive services is also evaluated, assessing the presence and variety of contraceptive methods offered at public health facilities. By analyzing these health facility characteristics, the study aims to identify the factors that facilitate or hinder the utilization of reproductive health services in South Sudan.

#### *2.4.1.4 Health Workforce*

The fourth domain, Health Workforce, relies on information primarily sourced from healthcare providers. This domain includes several variables that are critical to understanding the dynamics of RHS delivery. One key variable is the level of education among healthcare providers, which helps in assessing the competency and skill levels within the workforce. Another important factor is the cadre or academic qualification, which differentiates between various professional categories, such as nurses, midwives, and doctors, to determine how their qualifications impact service delivery.

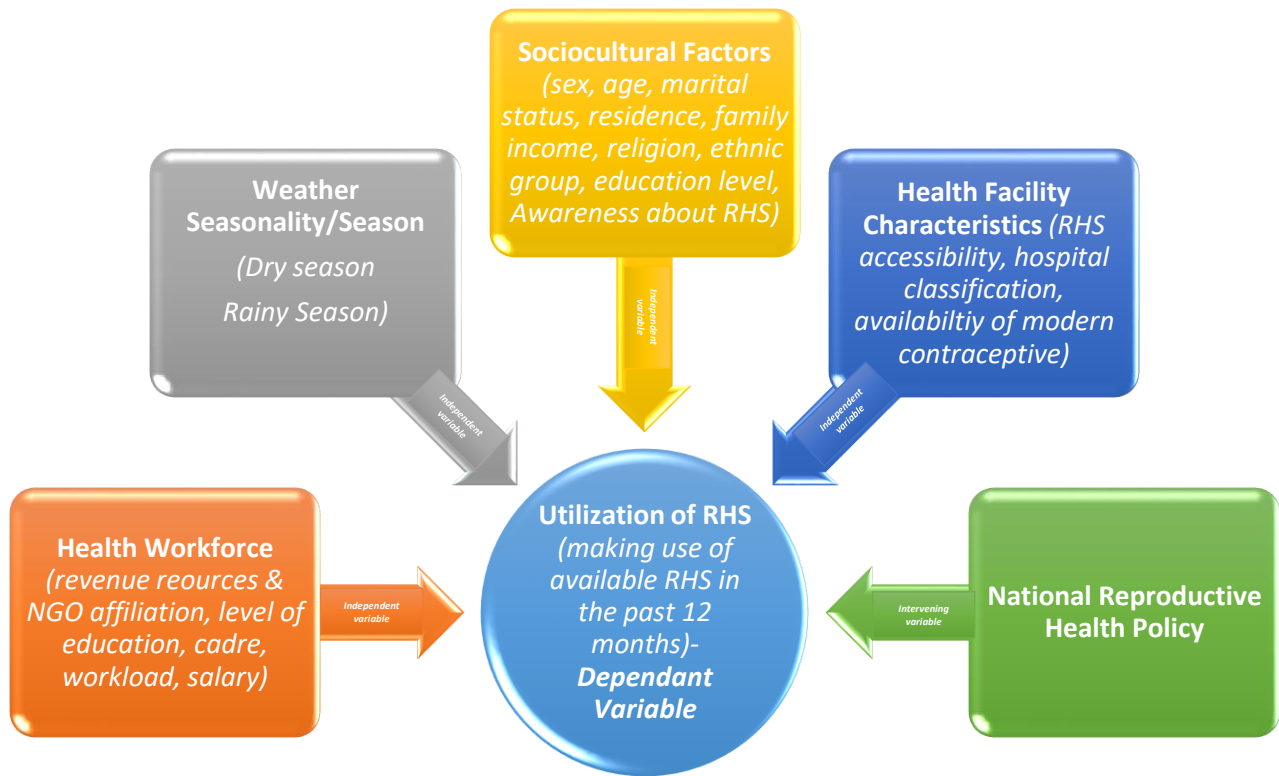
The workload is also a significant variable, examining the number of patients healthcare providers attend to and the strain this places on them. This helps in understanding how overburdened staff may affect the quality and accessibility of RHS. Salary is another crucial factor, as it influences job satisfaction and retention, which in turn impacts the consistency and quality of care provided.

Additionally, the domain explores revenue resources and NGO affiliation. This involves examining the sources of funding for RHS, including affiliations with non-governmental organizations and revenue generated from clients. Understanding the financial underpinnings and external support structures can provide insights into the sustainability and reach of reproductive health services. These comprehensive variables collectively offer a nuanced understanding of the multifaceted factors influencing the utilization of RHS in South Sudan.

## **2.4.2 Dependent Variable**

### ***2.4.2.1 Utilization of Reproductive Health Services***

This study examined the utilization of reproductive health services among women of reproductive age in the selected public health facilities in the past 12 months. These services encompass SRH information and education, modern contraceptive services, VCT services, and utilization of STI diagnosis and treatment services. The terms "uptake" and "utilization" were used interchangeably in this context (see Figure 2.1).



**Figure 2 1: Conceptual Framework**

Mount Kenya

## **CHAPTER THREE: RESEARCH METHODOLOGY**

### **3.0 Introduction**

This chapter provides an overview of the research methods employed in the study. It encompasses the research design, study site, target population, sample size determination, sampling strategy and technique, research instruments, data collection procedures, data management and analysis, research quality assurance, and ethical considerations.

### **3.1 Research Design**

The research employed a mixed-methods approach for data collection and analysis. The initial component constituted a longitudinal ecological study, extracting quarterly service utilization indicators from the Health Management Information System database and health facilities. This phase involved a retrospective review of data obtained from South Sudan's Ministry of Health spanning the years 2015 to 2020. The subsequent element consisted of an analytical cross-sectional study conducted in public health facilities, engaging both community members and health professionals.

The mixed-methods approach, incorporating both a longitudinal ecological study and an analytical cross-sectional study, offers a robust justification for comprehensively exploring the determinants of RHS utilization in South Sudan. The longitudinal ecological study leverages retrospective data from the HMIS and health facilities, allowing for the examination of trends and patterns in service utilization over an extended period (2015-2020). This retrospective review facilitates an understanding of temporal changes and the impact of various factors, such as weather seasonality, on service uptake. Complementing this, the analytical cross-sectional study provides

contemporaneous insights by directly engaging community members and health professionals in public health facilities. This component captures socio-cultural, facility-related, and workforce factors influencing service utilization at a specific point in time. The integration of these methods enhances the validity and depth of the findings, offering a holistic perspective on both historical trends and current determinants of RHS utilization, thus informing targeted interventions and policy decisions.

### **3.2 Study Location**

The study was conducted at specifically chosen public health facilities in two South Sudanese states: Western Equatoria and Central Equatoria. South Sudan, a member of the UN, AU, IGAD, and EAC, achieved independence on July 9, 2011. Geographically, it is located between latitudes 3° and 13°N and longitudes 24° and 36°E. The country is characterized by tropical forests, swamps, and grasslands, spanning a vast area of 640,000 square kilometres. As of 2018, South Sudan had an estimated population of 12.3 million, with an annual growth rate of 3.2%, and a total fertility rate of 7 (South Sudan Ministry of Health, 2018).

Previous study findings indicate that more than 83% of the population resides in rural areas. The presence of mobile pastoral communities, coupled with a low population density of 15 individuals per square kilometer and limited access due to prolonged crises, poses a significant challenge to effective health service delivery. On February 15th, 2020, a presidential decree led to the reversion of the country to ten states and three administrative areas, further subdivided into 85 counties, 545 Payams, and 2,500 Bomas (The World Fact Book, 2021). Following the peace agreement in February 2020, the country underwent a reorganization into the original 10 states: Central Equatoria, Eastern Equatoria, Jonglei, Lakes, Northern Bahr el Ghazal, Unity, Upper Nile, Warrap,

Western Bahr el Ghazal, and Western Equatoria. Additionally, two administrative areas, Pibor and Ruweng, and one special administrative status area, Abyei, were established (World Bank, 2021).

The study was carried out in Western Equatoria and Central Equatoria. Western Equatoria counties exhibit relative stability; however, in comparison to the number of health facilities in these areas, fewer facilities receive support from HPF3 compared to those supported under the previous HPF phases (1 & 2). These counties were not designated as iCCM counties, and in 2019, HPF did not support BHI in these areas due to security concerns, a lower number of supported facilities, and the absence of iCCM or BHI support in previous years. The population in these areas mainly consists of peasant farmers. Central Equatoria was purposefully selected due to its urban setting, implementation of iCCM, and HPF support for the implementation of BHI in 2019.

In the chosen states of Western Equatoria and Central Equatoria, data collection occurred across the four levels of the South Sudan health system: Boma Health Teams (community), Primary Healthcare Units (PHCU), Primary Healthcare Centres (PHCC), and hospitals. These facilities are closely aligned with the administrative subdivisions of the country, encompassing both rural and urban areas (Ministry of Health, 2012; and WHO South Sudan, 2020).

### **3.3 Target Population**

The research focused on women of reproductive age, encompassing the years between menarche and menopause, approximately spanning from ages 15 to 49, who visited public health facilities during the study period. This demographic served as the primary source of quantitative data for the study and was drawn from the selected public health facilities. The selection of this target population was guided by geographical locations.

Additionally, the study aimed to include key informants involved in reproductive health services (RHS) within public health facilities, as well as those responsible for implementing RH policies. Key informants comprised professionals such as doctors, nurses, clinical officers, and midwives. The study also involved focus group discussions with a diverse set of participants, including community leaders, various service user groups, health authorities at the County and Payam levels, health committees, implementing partners of Health Pooled Fund (HPF), health workers, community members, local media representatives, and non-governmental organizations/faith-based organizations (NGOs/FBOs).

### **3.3.1 Inclusion Criteria**

1. Age: Women aged 15 to 49 years.
2. Residence: Must have lived in the selected study area (Western Equatoria or Central Equatoria) for at least 6 months before the study.
3. Consent: Must provide informed consent to participate in the study.

### **3.3.2 Exclusion Criteria**

1. Age: Women outside the age range of 15 to 49 years.
2. Residence: Women who have not lived in the selected study area for at least 6 months before the study.
3. Consent: Women who do not provide informed consent to participate in the study

### 3.3.3 Non-Participation of Qualified Individuals

Despite meeting the inclusion criteria, several factors contributed to the non-participation of individuals who otherwise qualified for the study. First, logistical challenges such as the timing and location of data collection posed barriers. For instance, if data collection coincided with times when women were engaged in essential activities, such as farming or market days, they were unable to participate. Similarly, some of the locations selected for data collection might not have been easily accessible for all eligible women, especially in rural or remote areas where transportation options are limited.

In addition, personal circumstances and socio-cultural factors influenced participation. Some women faced restrictions from family members or community leaders, limiting their ability to consent and participate freely. Cultural norms and sensitivities around discussing reproductive health topics deterred some women from participating, particularly in settings where there is stigma or privacy concerns associated with such discussions.

### 3.4 Sample Size Determination

The sample size was calculated using Fisher's formula, it is used to compare a proportion of responses or values in a sample of data to a proportion in the population from which the sample data is drawn.(Daniel, 1999). The sample size was calculated using the following assumptions:

$$n = \frac{Z^2 pq}{d^2}$$

Where;

$n$  = the desired sample size (if the target population is more than 10,000)

$z$  = the standard normal deviation at the required confidence level of 1.96.

$d$  = the level of statistical significance set which is 0.05

$p$  = the proportion in the characteristics being measured i.e. the proportion of residents utilizing RH services in South Sudan is estimated to 50% (0.50). There is no estimate available of the proportion in the target population.

$q = 1 - p$  (1 - 0.5 = 0.5)

$$n = \frac{1.96^2 \times 0.5 \times 0.5}{0.05^2}$$

**$n = 384$**

Estimated proportional allocation was: Boma Health Teams (Community Level): 40% (160 women); Primary Healthcare Units (PHCU): 30% (120 women); Primary Healthcare Centres (PHCC): 20% (80 women); and Hospitals: 10% (40 women). From this sample size, the researcher selected respondents taking into consideration community members from different counties within the two selected States. The data obtained from this sample size was for the cross-sectional study arm which helped in assessing the determinants of uptake of the RHS among this study population.

The qualitative part of this study included purposively selected 25 key informants (health workers). Selection of health workers providing RHS was made according to health cadres and geographical locations (state and administrative areas) of health facilities across the selected states. Data was also abstracted between the years 2015 to 2020 for the longitudinal ecological arm of this study.

Retrospective data from the Health Ministry of health and the health facilities was obtained within the specified period to assess the utilization of the RH services between two weather seasons (wet and dry seasons).

### **3.5 Sampling Strategy and Technique**

The sampling strategy employed for this study focused on the main respondents within public health facilities in Western Equatoria and Central Equatoria. The quantitative sampling utilized a multi-stage cluster random sampling approach, with the initial stage involving selecting health facilities and the subsequent stage involving selecting participants.

In the first stage of sampling, a list of existing public health facilities within each selected state was compiled. From this list, a systematic random sampling method was applied to determine the facilities used as samples for the study. At least three (3) public health facilities were randomly selected in each state.

Moving on to the second stage of sampling, the selection of participants utilized the probability proportionate to size method. Using available lists, such as the 2018 census, of women of reproductive age (15-49 years) from the purposively selected states (Western Equatoria and Central Equatoria), the sampling interval was calculated. This involved dividing the total population of the area by the number of women of reproductive age visiting health facilities. A systematic random start number was then used to select the first client, and subsequent clients were determined by adding the sampling interval to the random number until the required number of clients was reached.

For the qualitative component of the study, twenty-five (25) key informants (health workers) with knowledge and experience in reproductive health services and policy implementation in South Sudan's public health sector were purposively selected. The selection of health workers took into account their health cadres and geographical locations, including states and administrative areas of public health facilities.

The selection of key informants was guided by their specialized knowledge, experience, and roles in the provision and policy implementation of RHS in South Sudan's public health sector. By choosing health workers from diverse cadres and geographical locations, the study aimed to gather comprehensive and nuanced insights into the operational, socio-cultural, and environmental factors affecting RHS uptake and utilization.

Key informant interviews focused on obtaining detailed information on the level of RHS utilization, the impact of weather seasonality, socio-cultural influences, health facility characteristics, and the health workforce's role in service delivery. These interviews provided valuable context, expert opinions, and practical observations that complemented the quantitative data, thereby enriching the overall understanding of the determinants influencing RHS utilization among women of reproductive age in South Sudan.

### **3.6 Research Instruments**

#### **3.6.1 Structured Questionnaire for the Local Community**

A structured questionnaire was formulated and utilized to predominantly gather quantitative data from women of reproductive age attending public health facilities in the selected states during the study period. This questionnaire served as the primary research instrument and featured

exclusively closed-ended questions, aligning with the specific objectives of the study. It aimed to assess the level of reproductive health service utilization, explore the impact of weather seasonality on service utilization, delve into socio-cultural factors, and examine health facility characteristics.

Participants were required to provide written consent, and confidentiality was assured throughout the process. The questionnaire commenced with a brief introduction, identifying the interviewer, the represented organization, and outlining the study's purpose. Face-to-face interviews were conducted in the selected public health facilities. Subsequently, the researcher transferred the questionnaire into a Kobo Toolbox account, a widely used and free open-source tool for mobile data collection. The account used for data entry had restricted access and was password-protected to ensure security and privacy.

### **3.6.2 Interview Guide for Key Informants**

An interview guide was employed for conducting in-depth interviews with key informants possessing expertise in reproductive health services (RHS). These key informant interviews (KIIs) targeted individuals with informed perspectives on various aspects of RHS or a profound understanding of the health system at the state and county levels.

The interview guide comprised open-ended questions tailored to the specific objectives of the study. The interviews were conducted in a face-to-face format, and the conversations were recorded through note-taking. With the interviewee's consent, the researcher also used a digital voice recorder to document the discussion. The researcher paid attention to non-verbal cues, expressions, and other reactions exhibited during the interview.

### **3.6.3 Focus Group Discussion**

The focus group discussion (FGD) assembled a homogeneous group of eight individuals, including key stakeholders and community members such as community leaders, different groups of service users, health authorities at the county and payam levels, health committees, HPF implementing partners, health workers, community members, local media, and NGOs/FBOs. This face-to-face conversation aimed to leverage the social dynamics of the group, facilitated by a moderator, to elicit participants' underlying opinions, attitudes, and reasons influencing the uptake and utilization of RHS. For each state, the researcher recruited participants for the FGDs by obtaining contact information from HPF, recruiting through the village chief, or employing a snowball sampling strategy. The researcher moderated four FGDs with key stakeholders and community members.

### **3.6.4 Data Abstraction Tool**

The data abstraction tool utilized in this study is a standardized instrument commonly employed to systematically gather data from scientific reports during the development of the Guide to Community Preventive Services. Specifically, the tool focused on obtaining utilization data for the proposed period from 2015 to 2020. Its design aimed to collect crucial information essential for generating analyzable data during this timeframe concerning the utilization of RHS.

The information required to complete the form covered details on the intervention under study, the evaluation setting, study population, outcomes, results, and study quality. The form comprises three sections: Part I, Classification Information, filled out by the chapter development team and reviewed and edited by the abstractors; Part II, Descriptive Information about the intervention,

evaluation study characteristics, measurement of outcomes, and results; and Part III, Study Quality, focusing on the execution of the study.

### **3.7 Reliability and Validity**

Reliability, in the context of this study, pertains to the consistency of a measure. Consistency can be evaluated across various dimensions: over time (test-retest reliability), across different items (internal consistency), and among different researchers (inter-rater reliability) (Price et al., 2015).

To ensure internal consistency of respondents' responses across multiple items, the researcher conducted checks on the reliability of the data. This involved employing the test-retest technique to assess the consistency of responses obtained through the data collection tools. The approach included examining a split-half correlation, where items were divided into two sets, such as the first and second halves or the even- and odd-numbered items. Internal consistency was measured using Cronbach's  $\alpha$  statistic, with a general guideline indicating that a Cronbach's alpha of .70 and above is considered good, .80 and above is better, and .90 and above is deemed best (Corbetta, 2003).

Validity of the data collection tool was achieved through piloting of the research tools before actually using them or administering them to the respondents. The tool was pre-tested prior to the actual data collection. The questionnaire and interview guide was issued to randomly selected respondents (10% of the sample size) outside selected States at Jonglei State. This measured the effectiveness of the tool and also determined the adequacy of the responses in relation to the study questions and objectives. The purpose of the pre-test was also to check the appropriateness, consistency and integrity of the data collection tools.

### **3.8 Data Collection Process**

The responsibility of collecting and overseeing field data collection rested with the researcher. Before commencing data collection, the researcher recruited and provided training to five research assistants (RAs). The RAs were briefed on the study's objectives, the methodological approach, and were trained on the administration of tools, including a detailed review and practice sessions. Training also covered ethical considerations, ensuring data confidentiality, and managing field logistics.

Participants were required to provide written consent, with a guarantee of confidentiality. The interviews and focus group discussions (FGDs) commenced with a brief introduction, identifying the interviewer, the represented organization, and outlining the study's purpose. Face-to-face interviews were conducted for administering the data collection tools. Key informants were notified in advance of the interview through a letter, followed by a confirmation via telephone. Following the notification, appointments were scheduled for interviews and FGDs at the appropriate date and time.

### **3.9 Data Management and Analysis**

In the study, a combination of quantitative and qualitative approaches was employed for analyzing data gathered from various data collection tools. To safeguard the collected data and uphold subject privacy, measures were taken to store it securely, preventing any damage or unauthorized access. The researcher implemented strict controls to ensure that only authorized individuals, specifically the researcher and statistician, could access the data files. Password protection was applied to the

files stored on a computer. During the post-data analysis phase, qualitative and quantitative data were triangulated to enhance the overall comprehensiveness of the analysis.

### **3.9.1 Quantitative Data Analysis**

Quantitative data obtained from the questionnaires were entered into a computer file for analysis using Microsoft Excel Spreadsheet. Subsequently, the data was exported to IBM Statistical Package for the Social Sciences (SPSS) version 23, and all sub-files were consolidated into a master file for comprehensive analysis. The initial stage of data analysis involved preparation tasks such as data validation, editing, and coding, transforming raw data into meaningful and readable formats.

Various statistical techniques were employed to identify significant correlations between variables, investigating the impact of one variable on another. Descriptive statistics, including mean, median, mode, percentage, frequency, and range, were utilized to provide an overview of top-level findings. Cross-tabulations were then employed to delve deeper into the dataset, revealing relationships between variables, especially when comparing results across demographic groups.

The examination of hypotheses involved calculating measures of statistical significance, with the p-value serving as an indicator. A p-value less than 0.05 is conventionally considered statistically significant, suggesting that the observed results are unlikely due to chance. Inferential analyses, such as correlation, regression, and analysis of variance, were applied as appropriate. For example, linear regression was used to predict variable values based on climate change or socio-cultural

characteristics, while one-way analysis of variance (ANOVA) determined significant differences in reproductive health service utilization based on clients' education levels.

In logistic regression, the researcher investigated how specific factors, including health facility and socio-cultural characteristics, influenced the utilization of RHS. This analysis aimed to identify statistically significant predictors ( $p$ -value  $< 0.005$ ) and quantify the strength and direction of these relationships.

### **3.9.2 Qualitative Data Analysis**

The researcher and RAs conducted preliminary content analysis of the qualitative data to identify any common patterns and trends arising from the narratives regarding: a) level of utilization of RHS; b) relationship between climate change and utilization of RHS; c) socio-cultural factors influencing uptake and utilization of RHS; d) influence of health facility characteristics on uptake and utilization of RHS; and e) influence of health workforce on uptake and utilization of RHS.

The researcher created a coding framework and thematic analysis guide to streamline the coding process. The coding framework included sections for codes and their corresponding definitions. QSR Nvivo8 Software was employed to aid in the qualitative data analysis. Initially, the researcher compared themes, identifying differences and similarities within comparable groups such as key stakeholders. Subsequently, the themes were stratified by gender, age, profession, and authority to gain deeper insights. The narratives were then developed around the main themes, and enriched with state-specific data wherever applicable.

Sequel Data Analytics was also used to translate data for analysing and interpretation. This is a powerful visualization combined with key metrics that gave the researcher instant access to

comprehensive performance analytics, providing invaluable insights into uptake and utilization of RHS in selected public health hospitals. It is an important technique to map out the present Strengths (S), Weakness (W), Opportunities (O) & Threats (T) the health facility is facing.

### **3.10 Ethical Consideration**

The researcher sought ethical approval from the Division of Research, Monitoring and Evaluation (Directorate of Planning and Coordination) in the Ministry of Health, and Research Ethics Committee (REC), Republic of South Sudan. Approval was also sought from Mount Kenyetta University Institutional Ethical Review Committee (IERC). The permission to access public health facilities and other offices was sought from the respective sectoral and departmental heads including the Ministry of Health and Local Governments in the Republic of South Sudan.

Respondents who consent to participate in the research were accorded anonymity and confidentiality to protect them as well as boost confidence in order to obtain accurate information. They were also accorded exercise of free will in deciding whether to participate in the research activity. In addition, the respondents reserved unconditional or absolute 'right' of withdrawal at any time and without giving any reason. This was expressly communicated before administering the questionnaires or conducting the interviews and reduced in writing. All responses were recorded verbatim and reported objectively. The study was voluntary and the participants were able to withdraw from any point in the study if they so wished.

The study strictly adhered to good practice ethics and principles for research and align with data collection and security/protection requirements. The researcher also took into consideration adaptations required to meet COVID-19 control regulations. They identified the level of risk for

the team and communities and equipped both personnel and participants with the necessary protective equipment.

The logistics regulations observed during data collection constituted a comprehensive set of measures aimed at ensuring the smooth, efficient, and ethical conduct of the research process. These regulations included the proper planning and coordination of data collection schedules to minimize disruptions to the health facilities and respondents, the secure and timely transportation of data collection tools and materials, and the adherence to protocols for the safe handling and storage of collected data to maintain confidentiality.

Additionally, logistics regulations ensured compliance with COVID-19 safety protocols, providing personal protective equipment (PPE) to both the research team and participants, and implementing social distancing measures. The researcher also coordinated with local authorities to ensure access permissions were in place and that data collection activities aligned with local guidelines and regulations, thus fostering a respectful and compliant research environment.

## CHAPTER FOUR: RESULTS AND DISCUSSION

### 4.1 Introduction

This chapter details the findings of a study conducted in randomly selected South Sudan's public health facilities in Central Equatoria and Western Equatoria. This chapter included both quantitative and qualitative research. Under the major subjects of the study, the results were presented objectively. Univariate, bivariate, and multivariate statistics were used to describe the quantitative findings, while verbatim quotes and thematically organized quotes made up the qualitative findings. Qualitative data was derived from key informants (including doctors, nurses, clinical officers, and midwives), and focus group discussions (including community leaders, different groups of service users, health authorities at the County and Payam levels, health committees, HPF implementing partners, health workers, community members, local media, and NGOs/FBOs).

### 4.2 Response Rate

A proportionate sample based on the number of health facilities available in each State was used to establish the sample respondents. The facility types included State Hospitals, Teaching Hospitals, County Hospitals, PHCC, and PHCU with 21 public health facilities representing Central Equatoria and 15 public health facilities representing Western Equatoria. The study aimed to target 384 women of reproductive age visiting selected public health facilities. However, to account for non-responses, the researcher increased the target population to 410 women. The increase in sample size was necessary to ensure an adequate sample size for statistical analysis. Out of the 410 women, 400 successfully participated in the study, resulting in a response rate of 97.6%.

### 4.3 Socio-Demographic Characteristics

The findings in Table 4.1 provide a demographic overview of the respondents, revealing that the majority (53.5%) are aged 30 years or older, with an average age of 29.8 years (SD = 7.80), and a range from 17 to 49 years. This indicates a broad representation across the reproductive age spectrum, with a slight skew towards older women. A significant majority of the respondents (67.0%) are married, reflecting the social and cultural context where marriage is common among women of reproductive age.

The data also shows that 20.5% of respondents are single, while 6.3% are divorced and another 6.3% are widowed, highlighting the diversity in marital status. Additionally, over eighty percent of the respondents reside in rural areas, with only 18.5% living in urban regions, underscoring the rural nature of the population and the potential challenges related to accessing reproductive health services in these areas. These demographic characteristics are crucial for understanding the health service needs and utilization patterns among different groups within the population.

Table 4.1 presents the socio-demographic characteristics of women of reproductive age visiting selected public health facilities in South Sudan. The majority of women (58.0%) seeking reproductive health services are from Central Equatoria, while 42.0% are from Western Equatoria. This distribution indicates a relatively higher representation from Central Equatoria. Nearly half of the women (46.5%) seeking reproductive health services are younger than 30 years, while 53.5% are 30 years and older. This distribution suggests a diverse age range among women accessing reproductive health services.

**Table 4. 1:** Socio-demographic characteristics of women of reproductive

<b>Variable</b>	<b>Category</b>	<b>Frequency</b>	<b>Percentage (%)</b>
State	Central Equatoria	232	58.0
	Western Equatoria	168	42.0
Age	Younger than 30 years	186	46.5
	30 years and older	214	53.5
Marital status	Single	82	20.5
	Married	268	67.0
	Divorced	25	6.3
	Widowed	25	6.3
Place of residence	Urban	74	18.5
	Rural	326	81.5
Employment status	In school or training	48	12.0
	Paid/wage/paid in kind employed	19	4.8
	Self-employed	121	30.3
	Unemployed	173	43.3
	Unemployed but not seeking work for other reasons	39	9.8
Household wealth status	Poor (<500,000 SSP)	365	91.3
	Middle (500,000 SSP -1,000,000 SSP)	35	8.8
Religion	Christian	348	87.0
	Traditional	52	13.0
Education status	No school	147	36.8
	Only traditional/non-formal school	53	13.3
	Dropped-out of school	27	6.8
	Completed secondary	173	43.3

*Source: Research Data (2023)*

A significant proportion of women (67.0%) seeking reproductive health services are married, while smaller percentages are single (20.5%), divorced (6.3%), or widowed (6.3%). This reflects the varied marital status of the women in the study. The majority of women (81.5%) seeking reproductive health services reside in rural areas, with 18.5% residing in urban areas. This indicates that the study includes a substantial representation of rural communities.

A notable proportion of women seeking reproductive health services are unemployed (43.3%), followed by those who are self-employed (30.3%) and in school or training (12.0%). This highlights the diverse employment statuses of the women in the study. The majority of women (91.3%) seeking reproductive health services are categorized as poor, with a smaller percentage (8.8%) falling into the middle-wealth status. This suggests a predominantly low-income population accessing reproductive health services.

A large majority of women (87.0%) seeking reproductive health services identify as Christian, while 13.0% adhere to traditional religious beliefs. This reflects the religious diversity of the study population. The education status of women seeking reproductive health services varies, with 43.3% having completed secondary education, 36.8% having no school education, 13.3% in non-formal school, and 6.8% having dropped out. This indicates a range of educational backgrounds among the women in the study.

The socio-demographic characteristics of the respondents provide a foundation for exploring how age, marital status, residence, employment status, economic status, religion, and education level influence the uptake and utilization of reproductive health services among women in South Sudan's public health facilities. These findings help guide the research study in understanding the determinants of RHS utilization and developing targeted interventions to address disparities and barriers among different demographic groups.

The socio-demographic characteristics of women seeking reproductive health services in South Sudan have important implications for the study's main objectives. The higher representation of women from Central Equatoria compared to Western Equatoria suggests variations in reproductive health needs and utilization patterns between these regions. Interventions should consider regional

differences to effectively address the specific challenges and requirements of each area. The diverse age range of women seeking reproductive health services highlights the importance of tailoring interventions to address the unique needs of both younger and older age groups. Educational campaigns and service delivery models should consider age-specific information and services.

The predominance of married women seeking RHS underscores the significance of family planning and maternal health interventions. Strategies should consider the diverse marital statuses, ensuring inclusivity in service delivery and addressing the unique needs of single, divorced, and widowed women. The majority residing in rural areas indicates the importance of outreach programs and mobile health services to reach women in remote locations. Strategies should focus on overcoming geographical barriers and improving accessibility to reproductive health services in rural communities.

The high percentage of unemployed women seeking RHS suggests a potential vulnerability in terms of economic resources. Interventions should address the economic aspects of reproductive health, considering the financial constraints faced by this group. The concentration of women in the poor wealth status category emphasizes the socio-economic challenges faced by this population. RH programs should be designed to be affordable and accessible to economically disadvantaged women. The religious diversity among women seeking reproductive health services emphasizes the need for culturally sensitive and religiously inclusive interventions. Strategies should respect and integrate cultural and religious beliefs into reproductive health promotion.

The varied education levels highlight the importance of educational campaigns tailored to different educational backgrounds. Health literacy initiatives should be designed to address the specific

needs of women with diverse educational experiences. Understanding these socio-demographic characteristics allows policymakers and healthcare providers to design targeted and context-specific reproductive health interventions. Tailoring services to the unique needs, preferences, and challenges of different demographic groups enhances the effectiveness and inclusivity of reproductive health programs in South Sudan.

#### **4.4 Level of Utilization of Reproductive Health Services**

The level of uptake and utilization of the RHS variable was established by collecting data from the local community using a structured questionnaire, and a longitudinal ecological study in which quarterly returns of service utilization indicators were obtained from the Health Management Information System database and health facilities.

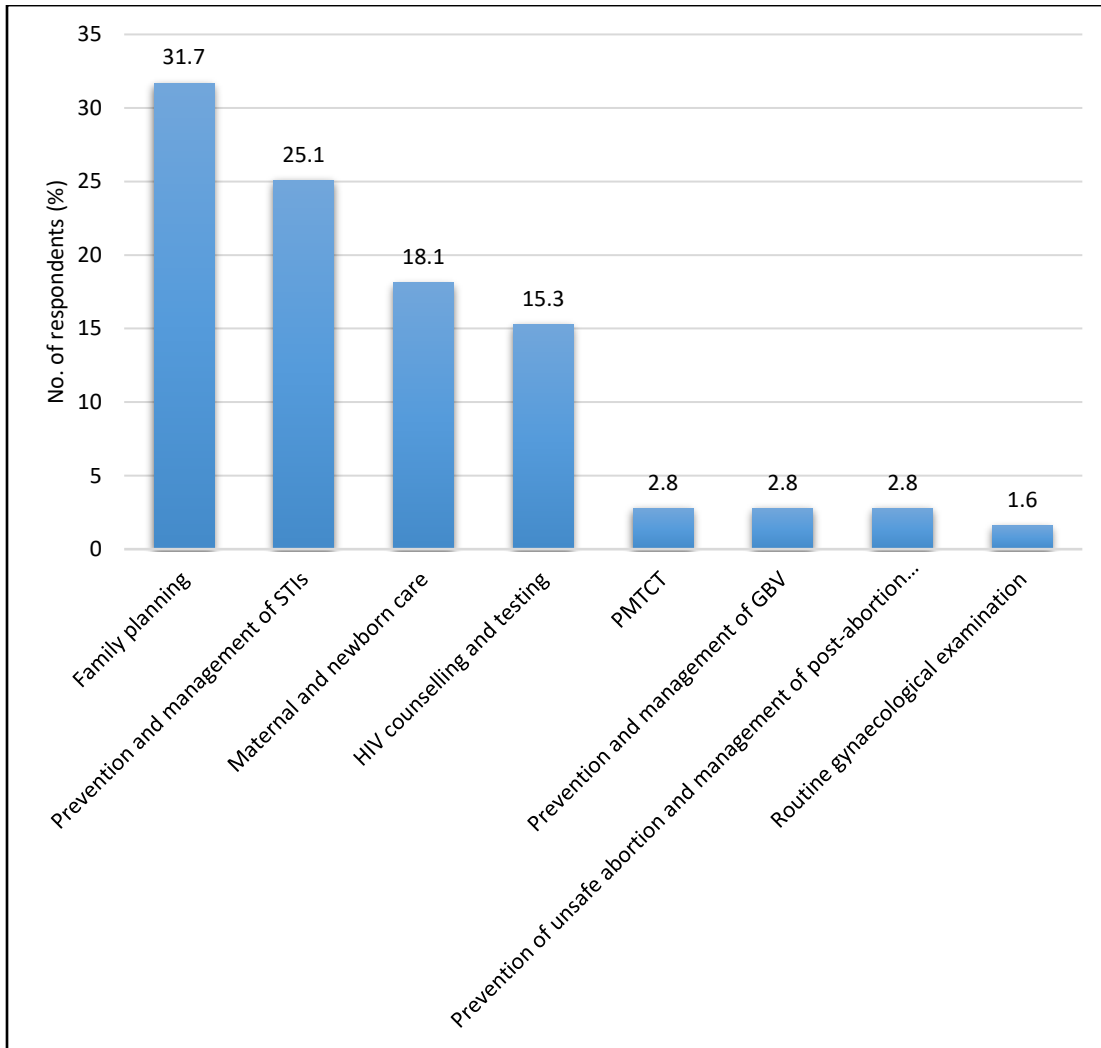
##### **4.4.1 Quantitative Analysis for Level of Utilization of Reproductive Health Services**

The scoping review and data collection were retrospective data derived from South Sudan's Ministry of Health from 2015 to 2020. The service utilization indices included: family planning, HIV counselling and testing, prevention and management of STIs, and maternal and newborn care.

###### ***4.4.1.1 Reproductive Health Services Received in the Past 12 Months***

The fact that family planning and STI services are the most utilized implies that these services are in high demand and should be a priority for program planning and resource allocation. It suggests that health facilities should ensure they can meet this demand effectively. Thus, the findings regarding the utilization of specific reproductive health services point to areas of high demand and areas where the research should explore the underlying factors that influence utilization, including

sociocultural, facility-related, and workforce-related aspects. Additionally, if seasonal variations are affecting service utilization, this should be taken into account in program planning and service delivery.



**Figure 4. 1:** List of services received in the selected public health facilities  
**Source:** Research Data (2023)

The finding that family planning and STI services are the most utilized among reproductive health services implies several significant implications for the study's main objective. First, the high utilization of family planning and STI services identifies these areas as high-priority regarding program planning and resource allocation. It suggests that there is a substantial demand for these

specific services, and addressing this demand should be a focal point for reproductive health programs in the study area. In addition, health facilities need to ensure they have the necessary capacity and resources to meet the high demand for family planning and STI services. This finding underscores the importance of strategic resource allocation, staffing, and infrastructure planning to effectively address the needs of the population in these key areas.

The study should explore the underlying factors influencing the high utilization of family planning and STI services. Understanding sociocultural, facility-related, and workforce-related aspects contributing to the demand for these services can guide targeted interventions and improvements in service delivery. More so, if there are indications that seasonal variations affect service utilization, this finding highlights the need for flexibility in program planning and service delivery. Adapting to seasonal trends ensures that health facilities can effectively meet the fluctuating demand for reproductive health services throughout the year. Also, the findings suggest that program planning should prioritize family planning and STI services to align with the observed demand. This includes tailoring interventions to address specific challenges or barriers that may influence the utilization patterns of these services.

In summary, the identification of family planning and STI services as the most utilized signifies areas of high demand that warrant focused attention in program planning. The study should delve deeper into the factors influencing this utilization, consider seasonal variations, and use this information to enhance strategic service delivery, aligning with the overarching objective of improving reproductive health outcomes in the study area.

#### *4.4.1.2 Availability of Reproductive Health Services*

The finding that 86.3% of the women who visited the selected public health facilities reported not getting all of the RHS they were seeking has significant implications for the healthcare system and the main objectives of the study. This high percentage indicates a substantial gap between the demand for RHS and the availability or provision of these services in public health facilities. This finding suggests potential deficiencies in the healthcare infrastructure, resources, or management within these facilities. The inability to provide comprehensive RHS could be due to various factors, including inadequate supply of medical supplies, insufficient staffing, limited range of services offered, or logistical challenges. These issues need to be addressed to improve the overall effectiveness and reliability of RHS delivery.

The unmet demand for RHS has direct implications for the health and well-being of women of reproductive age. When women do not receive the full range of RHS they need, it can lead to adverse health outcomes such as untreated STIs, unplanned pregnancies, complications during pregnancy and childbirth, and poor maternal and newborn health. This underscores the urgent need for targeted interventions to ensure that all essential RHS are accessible and available to all women who need them. Moreover, this finding has broader implications for public health policy and planning. It highlights the need for a comprehensive assessment of the barriers preventing women from accessing complete RHS. These barriers could be socio-cultural, economic, or systemic. Understanding and addressing these barriers is crucial for improving service delivery and ensuring that public health facilities can meet the needs of their populations.

The high percentage of women who did not receive all the RHS they were seeking suggests that there may be barriers or limitations in the availability of services or access to services within the

selected public health facilities. Understanding why these women did not receive the full range of services is crucial in assessing the overall uptake and utilization of RHS. Additionally, if a substantial proportion of women do not receive the full range of RHS they seek, it indicates service delivery gaps that need to be addressed. Identifying these gaps can inform improvements in service provision. The findings highlight a potential gap between the services women are seeking and the services they receive. Investigating the reasons behind this gap is critical for understanding the factors influencing the uptake and utilization of RHS, as outlined in the study's objectives. These findings also point to the need for addressing service delivery challenges and ensuring that women can access the full spectrum of RHS they require.

The finding that the majority of women (86.3%) visiting the selected public health facilities did not receive all of the RHS they were seeking has significant implications for the main objective of the study: The high percentage of women not receiving all desired RHS indicates substantial unmet reproductive health needs in the study population. The main objective of the study, which likely involves assessing the uptake and utilization of RHS, suggests that a considerable portion of the target population is not having their comprehensive reproductive health needs met. In addition, the study should explore the barriers preventing women from accessing the full spectrum of RHS they seek. Identifying these barriers, which may include facility-related factors, geographical accessibility issues, or health workforce limitations, is crucial for addressing gaps in service provision.

The study should investigate the quality-of-service delivery in the selected public health facilities. A high percentage of women not receiving all desired RHS may point to issues related to service availability, facility capacity, or service delivery efficiency. Assessing these aspects is essential

for improving the overall quality of RH care. Disparities in service provision may exist, leading to inequities in reproductive health outcomes. The study should consider factors such as socio-demographic characteristics, geographic location, or other determinants that may contribute to the observed discrepancy in service receipt.

#### *4.4.1.3 Awareness of Free Access to Reproductive Health Services*

The finding that 77.3% of women who visited the selected public health facilities were not aware that public health facilities provide free access to RHS prior to their latest visit has several important implications for the healthcare system and the main objectives of the study. Firstly, this high level of unawareness indicates a significant communication and information dissemination gap. It suggests that public health facilities and the health authorities may not be effectively promoting the availability of free RHS to the target population. This lack of awareness can lead to underutilization of available services, as many women might avoid seeking care due to the assumption that they cannot afford it. To address this issue, there needs to be a concerted effort to enhance public awareness campaigns, utilizing various channels such as community outreach, local media, social networks, and health education programs to inform women about the availability and accessibility of free RHS.

Secondly, this finding underscores the importance of health education and advocacy. Effective health education programs are essential to bridge the knowledge gap and empower women to make informed decisions regarding their reproductive health. By increasing awareness about the availability of free RHS, health authorities can encourage more women to seek timely and appropriate care, thereby improving health outcomes. Additionally, the unawareness of free RHS could be linked to broader socio-cultural and systemic barriers. It may reflect issues such as low

literacy levels, cultural norms that restrict women's access to information, or mistrust in the healthcare system. Addressing these underlying barriers requires a holistic approach that includes community engagement, cultural sensitivity, and trust-building initiatives between healthcare providers and the communities they serve.

From a policy perspective, the finding highlights the need for strategic planning and resource allocation to improve the visibility and reach of RHS. Health policies should prioritize the dissemination of information about free services and ensure that health facilities are adequately supported to provide these services efficiently. Moreover, the study's objective of assessing the level of uptake and utilization of RHS is directly informed by this finding. It reveals a critical factor influencing the utilization of RHS – lack of awareness. This insight can guide the development of targeted interventions aimed at increasing awareness and utilization of RHS among women of reproductive age.

Lack of awareness regarding free access to RHS in public health facilities suggests a potential knowledge gap among the target population. This lack of awareness could influence their decision to seek RH services, which can impact the overall uptake and utilization. In addition, lack of awareness can be a significant barrier to accessing RHS. Understanding why women are unaware of these services can help identify ways to improve communication and information dissemination about available services.

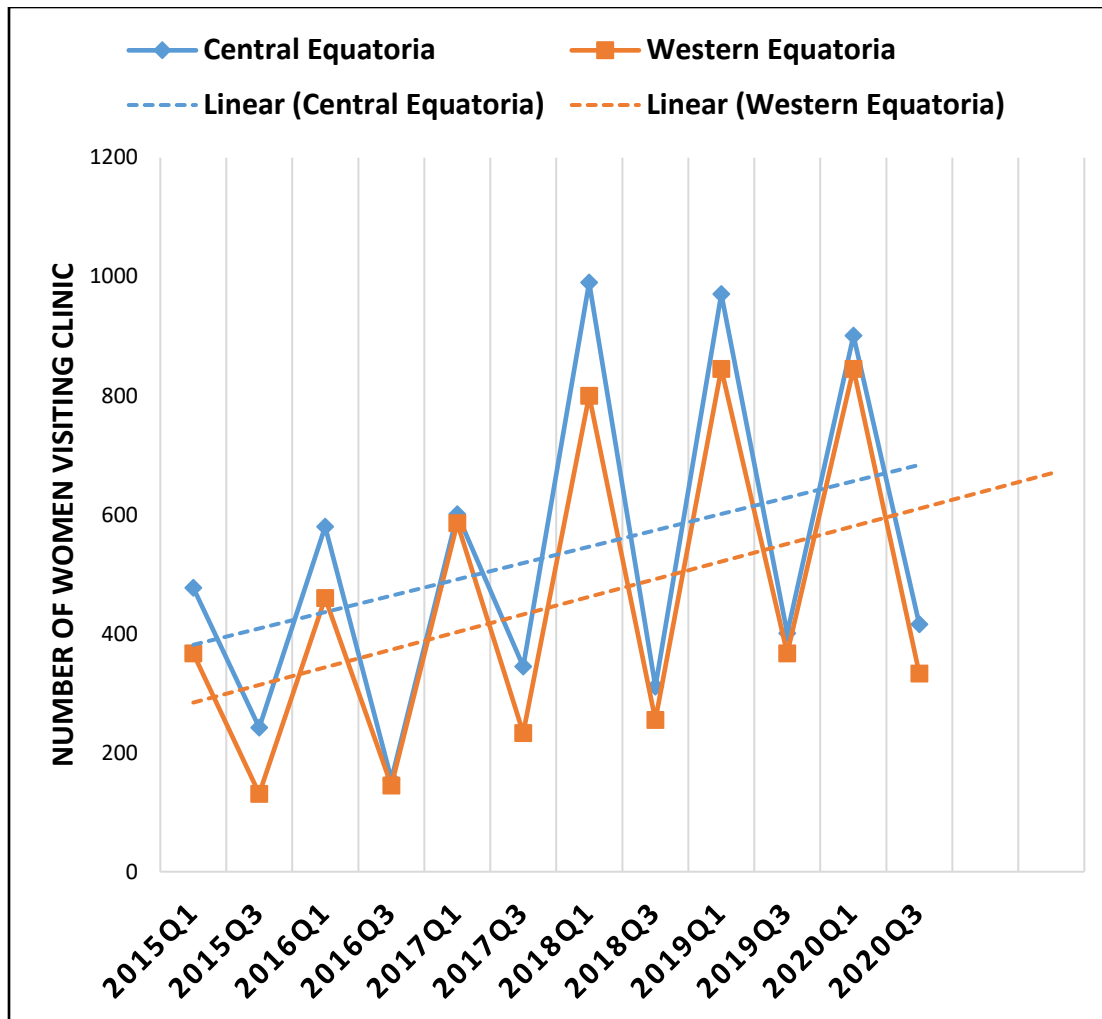
These findings highlight the need for more robust public health promotion and education efforts to inform women about the availability of free RHS in public health facilities. It suggests that public health awareness campaigns could play a critical role in improving service utilization. Additionally, policymakers and health authorities should take note of this lack of awareness. It

may necessitate changes in policy and strategies to enhance awareness and education about RHS and their accessibility. In summary, the significant lack of awareness regarding free access to public health facilities providing RHS highlights a critical barrier to the main objective of promoting RHS utilization.

#### *4.4.1.4 Trend and Seasonal Components of Family Planning Visits*

The selected RHS data (including family planning, HIV counselling & testing, and maternal & newborn care) of women of reproductive age attending the RHS clinic was plotted against period (Quarter 1 and Quarter 3). Figure 4.2 shows that there were seasonal variations in the number of family planning visits since there were several peaks and troughs each year. The trend curve shows that there was a steady increase in the family planning uptake all through from the first and third quarters of 2015 up to the first and third quarters of 2020. However, there are some seasonal differences of family planning attendance in terms of the first and third quarters all from 2015 to 2020, there is a consistent decline in attendance during the third quarters.

Health facilities can use this information to plan for varying service demands throughout the year. It may require adjusting staffing levels, scheduling, and resource allocation to accommodate fluctuations in family planning service utilization. In addition, health policies and programs should consider these seasonal variations in family planning utilization. Strategies can be developed to encourage consistent access to family planning services throughout the year. Figure 4.2 findings indicate that weather season has a relationship with family planning service utilization. This insight is essential for understanding and addressing the influence of seasonality on the uptake of reproductive health services. It provides valuable information for service planning, resource allocation, and the development of targeted interventions to promote consistent service utilization.



**Figure 4. 2:** Scatter and trend plots of family planning visits  
*Source: Research Data (2023)*

The identification of seasonal variations in the number of family planning visits has several implications for the main objective of the study. The observed seasonal variations in family planning visits suggest fluctuations in the demand for these services during specific periods. To achieve the main objective of enhancing reproductive health service utilization, it is crucial to understand these patterns to better allocate resources, plan interventions, and address potential barriers during low-attendance periods. In addition, the study should recommend a strategic approach to resource planning and allocation based on the identified seasonal trends. Understanding when demand is likely to be higher or lower allows health facilities and

policymakers to optimize resource distribution, staffing levels, and outreach efforts, ensuring efficient service delivery.

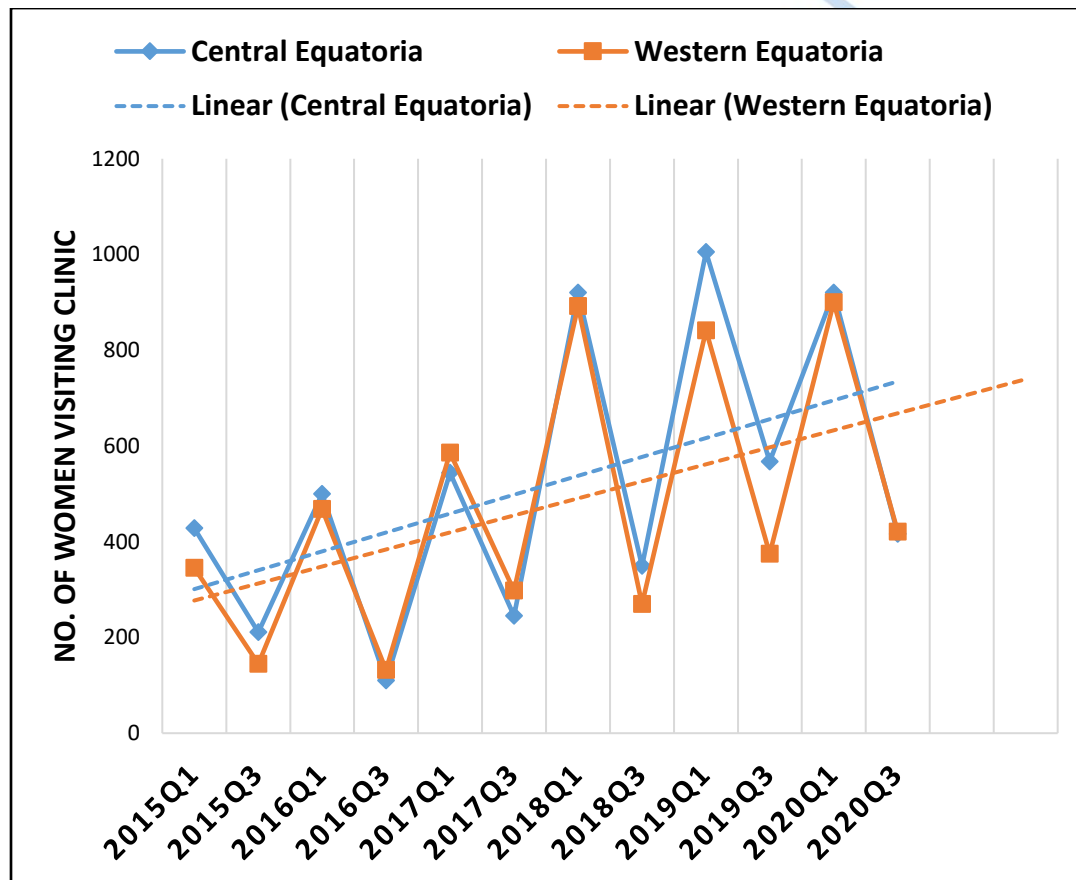
The decline in family planning attendance during the third quarter indicates a potential need for targeted interventions during this period. The study should explore the reasons behind this decline, whether influenced by cultural, environmental, or other factors and propose strategies to counteract it. The study should recommend the timing of health education campaigns and community outreach efforts based on the identified seasonal patterns. Launching awareness campaigns and educational initiatives during periods of lower attendance may help boost awareness and utilization when it is needed most. During Peak Periods: Recognizing the peaks in family planning visits is essential for health facilities to enhance service delivery during these high-demand periods.

#### *4.4.1.5 Trend and Seasonal Components of HIV Counselling and Testing*

Figure 4.3 shows that there were seasonal variations in the HIV counselling & testing visits since there were several peaks and troughs each year. The trend curve shows that there was a steady increase in HIV counselling & testing uptake all through from the first and third quarters of 2015 up to the first and third quarters of 2020. However, there are some seasonal differences of HIV counselling & testing attendance in terms of the first and third quarters all from 2015 to 2020, there is a consistent decline in attendance during the third quarters.

The observed seasonal variations in HIV counselling and testing visits indicate that weather seasons play a role in the utilization of these services. The steady increase from the first to the third quarters of 2015 to 2020 suggests that certain times of the year are associated with increased HIV counselling and testing utilization. In addition, the study identifies specific patterns, such as

consistent declines in attendance during the third quarter. Understanding these patterns is crucial for health facilities and policymakers to allocate resources effectively and address any challenges associated with these seasonal variations. Health facilities can use this information to plan for varying service demands throughout the year. It may require adjusting staffing levels, scheduling, and resource allocation to accommodate fluctuations in HIV counselling and testing service utilization. Health policies and programs should also consider these seasonal variations in HIV counselling and testing utilization. Strategies can be developed to encourage consistent access to these services throughout the year.



**Figure 4. 3:** Scatter and trend plots of HIV counselling and testing visits  
*Source: Research Data (2023)*

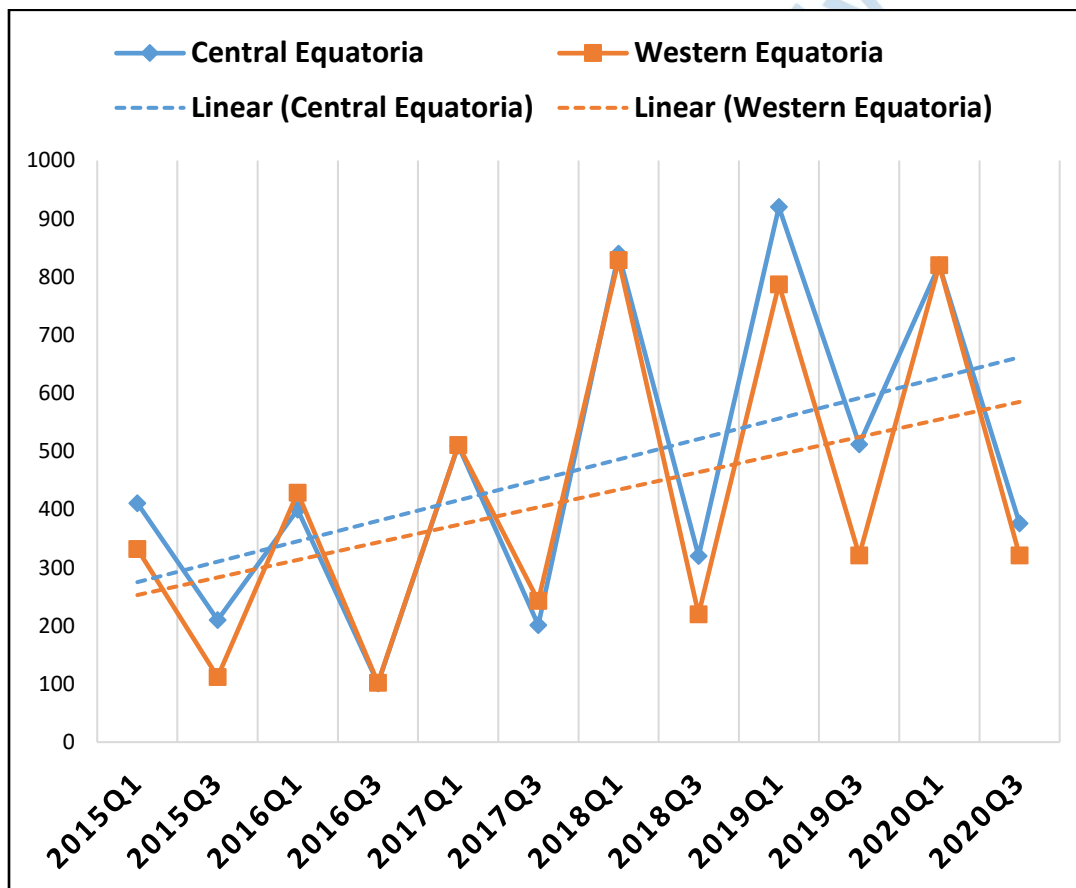
Figure 4.3 findings indicate that weather season has a relationship with HIV counseling and testing service utilization. This insight is essential for understanding and addressing the influence of seasonality on the uptake of reproductive health services. It provides valuable information for service planning, resource allocation, and the development of targeted interventions to promote consistent service utilization.

The identification of seasonal variations in HIV counselling and testing visits has several implications for the main objective of the study. Similar to family planning, the observed seasonal variations in HIV counselling and testing visits suggest fluctuations in the demand for these services during specific periods. Understanding these patterns is crucial for optimizing resource allocation, planning interventions, and addressing potential barriers during low-attendance periods. The study should recommend a strategic approach to resource planning and allocation based on the identified seasonal trends in HIV counselling and testing. Health facilities and policymakers can use this information to optimize staffing levels, outreach efforts, and service delivery during periods of increased demand. The consistent decline in attendance during the third quarter for HIV counselling and testing indicates a need for targeted interventions during this specific period.

In summary, the identification of seasonal variations in HIV counselling and testing visits provides essential insights for the main objective of the study. It guides strategic planning, resource allocation, and targeted interventions to enhance the utilization of HIV counselling and testing services in response to the observed patterns.

#### 4.4.1.6 Trend and Seasonal Components of Maternal and Newborn Care

Figure 4.4 shows that there were seasonal variations in the maternal and newborn care visits since there were several peaks and troughs each year. The trend curve shows that there was a steady increase in the maternal and newborn care uptake all through from the first and third quarters of 2015 up to the first and third quarters of 2020. However, there are some seasonal differences in maternal and newborn care attendance in terms of the first and third quarters all from 2015 to 2020, there is a consistent decline in attendance during the third quarters.



**Figure 4. 4:** Scatter and trend plots of maternal and newborn care visits  
*Source: Research Data (2023)*

The observed seasonal variations in maternal and newborn care visits indicate that weather seasons play a role in the utilization of these services. The steady increase from the first to the third quarters of 2015 to 2020 suggests that certain times of the year are associated with increased maternal and newborn care utilization. In addition, health policies and programs should consider these seasonal variations in maternal and newborn care utilization. Strategies can be developed to encourage consistent access to these services throughout the year, particularly during times when attendance tends to decline.

Figure 4.4 findings indicate that weather season has a relationship with maternal and newborn care service utilization. This insight is essential for understanding and addressing the influence of seasonality on the uptake of reproductive health services. It provides valuable information for service planning, resource allocation, and the development of targeted interventions to promote consistent service utilization, especially in maternal and newborn care.

The identification of seasonal variations in maternal and newborn care visits has several implications for the main objective of the study. The study should emphasize the importance of health facilities anticipating and preparing for seasonal fluctuations in maternal and newborn care attendance. This includes planning for increased demand during peak periods and identifying strategies to address potential barriers during low-attendance periods. Similar to family planning and HIV counselling and testing, the study should recommend a strategic approach to resource planning and allocation based on the identified seasonal trends in maternal and newborn care. Health facilities can use this information to optimize staffing, equipment, and infrastructure during periods of increased demand. The consistent decline in attendance during the third quarter for maternal and newborn care suggests a need for targeted interventions.

#### 4.4.2 Qualitative Analysis for the Level of Utilization of Reproductive Health Services

The research study aims to examine the level of utilization of RHS among women of reproductive age in South Sudan's public health facilities. Specifically, it focuses on examining the level of uptake and utilization of reproductive health services, including family planning, HIV counselling and testing, and maternal and newborn care services, in selected public health facilities.

##### 4.4.2.1 Family Planning

The research findings indicate that most of the participants believed that there is regular utilization of RHS in South Sudan public health facilities that specifically focus on family planning, HIV counseling and testing, prevention and management of STIs, and maternal and newborn care.

*Women of reproductive age consistently access and utilize family planning services to prevent unintended pregnancies. It suggests that the facilities offer a range of modern contraceptive methods such as intrauterine devices, oral contraceptives, condoms (male & female), injectables, emergency contraceptive pills, and spermicidal agents. (FGD, Payam, 2023)*

However, the study revealed that the RH clinics do not necessarily provide accurate information and they lack mechanisms to support follow-up and continuation of contraceptive use. From the interaction with participants, it was evident that there were gaps in knowledge and training among healthcare providers in the RH clinics. Limited training and resources may have contributed to inaccurate or incomplete information being provided to clients seeking contraceptive services.

The qualitative finding that participants believe in the regular uptake and utilization of RHS, particularly in the areas of family planning, HIV counselling and testing, prevention and management of STIs, and maternal and newborn care, has significant implications for the main objective of the study. This belief reflects perceptions and attitudes among the study participants, shedding light on the perceived effectiveness and accessibility of RHS in South Sudan public health facilities.

The positive belief in regular uptake and utilization suggests a level of confidence and trust in the availability and quality of RHS in public health facilities. This aligns with the overarching goal of the study, which is likely centered around understanding the factors influencing the actual uptake and utilization of reproductive health services. The qualitative finding provides context to the quantitative data, indicating that there is an established perception among participants that these services are actively used and valued by the community.

Moreover, this belief may influence the decision-making process of women regarding seeking reproductive health services. If the community perceives these services positively, it could act as a facilitator in encouraging women to utilize such services. Understanding these perceptions is crucial for designing interventions and policies that not only address barriers to access but also build on the existing positive attitudes, potentially leading to increased uptake. On the other hand, it is essential to critically analyze whether the belief in regular uptake aligns with the actual quantitative data collected in the study. The qualitative findings may provide insights into why certain services are perceived as being utilized regularly and how this perception might influence women's choices. It prompts a deeper exploration of the socio-cultural, economic, and

geographical factors that contribute to the perceived regular uptake, allowing for a more nuanced interpretation of the quantitative results.

The qualitative analysis reveals a multifaceted understanding of the utilization of RHS in South Sudan public health facilities, particularly focusing on family planning, HIV counselling and testing, prevention and management of STIs, and maternal and newborn care. Participants in the study expressed a belief in the regular uptake of these services, highlighting the perceived availability and importance of modern contraceptive methods, such as intrauterine devices, oral contraceptives, condoms, injectables, emergency contraceptive pills, and spermicidal agents. This indicates a certain level of confidence and trust in the public health system's capacity to provide essential RHS. However, the analysis also uncovers significant gaps in the accuracy of information and follow-up mechanisms, pointing to deficiencies in the training and resources available to healthcare providers.

These gaps suggest that while the services are utilized, the quality of care and continuity of contraceptive use are compromised, potentially impacting the overall effectiveness of RHS. The qualitative findings provide valuable context to the quantitative data, revealing the community's positive perceptions and attitudes towards RHS availability and highlighting critical areas for improvement to ensure comprehensive and sustained utilization of these services. This synthesis underscores the importance of addressing training and resource limitations to enhance the quality and continuity of RHS, ultimately aligning with the study's objective of understanding and improving reproductive health service delivery in South Sudan.

#### 4.4.2.2 HIV Counseling and Testing

The research findings indicate that there is regular uptake and utilization of HIV counseling and testing services in the selected South Sudan public health facilities. Key informant and stakeholders argue that women of reproductive age visiting RH clinics are actively seeking and utilizing HIV counseling and testing services to know their HIV status. They add that the public health facilities have confidentiality measures, and accessible testing options to encourage regular testing and ensure appropriate counseling and referral for treatment and support services.

*“There is a lack of an adequate number of trained personnel in HIV testing and counseling clinics. There is a shortage of staff members, including counselors and healthcare providers, which hinder the provision of regular HIV testing and comprehensive counseling services. In addition, there are gaps in training among the personnel working in HIV testing and counseling clinics. Staff members who were there did not have adequate training on HIV testing protocols, counseling techniques, and the latest advancements in HIV prevention, treatment, and support services.” (KI-MD, 2023)*

The analysis showed there were challenges within HIV testing and counseling clinics in public health facilities in South Sudan regarding staffing and training, counseling and referral services, accessibility and availability, and community engagement and awareness. However, experts and stakeholders emphasised the need for integration of HIV counseling and testing within the broader RHS. They recommended the importance of incorporating HIV testing as a routine component of reproductive health care, promoting a holistic approach to health service delivery.

The qualitative finding that there is regular uptake and utilization of HIV counseling and testing services in the selected South Sudan public health facilities has profound implications for the main objective of the study. This finding provides a nuanced understanding of the factors contributing to the success of HIV counseling and testing services and sheds light on the dynamics influencing women of reproductive age in seeking and utilizing these specific reproductive health services. The qualitative data suggests that the community values and actively seeks HIV counseling and testing services. The fact that women of reproductive age are reportedly proactively utilizing these services indicates a positive perception of the importance of knowing one's HIV status. This aligns with the broader goal of reproductive health services, emphasizing preventive and proactive healthcare. Understanding the factors that drive this active engagement can inform strategies to replicate this success in other areas of reproductive health.

The mention of confidentiality measures and accessible testing options in public health facilities is crucial. It signifies that the healthcare system has established a conducive environment that respects individuals' privacy and makes testing services easily accessible. This positive environment could be a contributing factor to the regular uptake. The study may explore further how these measures are implemented and perceived by service users, providing insights into the elements of a successful reproductive health service model. Additionally, the acknowledgement of appropriate counseling and referral for treatment and support services implies a holistic approach to HIV counseling and testing. It suggests that the public health facilities are not only focused on testing as a standalone service but are also providing comprehensive support, including counseling and access to further medical interventions if needed. This holistic approach aligns with the goals of reproductive health services to address both physical and psychological aspects of healthcare.

The qualitative analysis of HIV counseling and testing services in South Sudan's public health facilities reveals a complex interplay of strengths and challenges that have profound implications for the main objective of the study. The findings indicate that women of reproductive age regularly seek and utilize these services, highlighting a community-wide recognition of the importance of knowing one's HIV status. The availability of confidentiality measures and accessible testing options fosters a positive environment that encourages regular testing, signaling an effective aspect of the healthcare system. However, significant gaps in staffing and training were identified, with a shortage of adequately trained personnel in HIV testing protocols and counseling techniques. This shortage hinders the provision of comprehensive HIV testing and counseling services.

Despite these challenges, experts advocate for the integration of HIV counseling and testing within broader reproductive health services to promote a holistic approach to healthcare. The community's proactive engagement with HIV services suggests a successful model that could be replicated across other reproductive health services, emphasizing preventive and proactive healthcare. This synthesis underscores the need to address training and staffing issues to enhance the quality and reach of HIV counseling and testing, ultimately informing strategies to improve overall reproductive health service delivery in South Sudan.

#### *4.4.2.3 Maternal and Newborn Care Services*

The identified theme was the influence of religion and cultural norms on the utilization of maternal and newborn care services. South Sudan, like many other countries, has diverse religious and cultural beliefs that shape individuals' attitudes and behaviors towards reproductive health. It was established that these norms discouraged or restricted women from seeking or accessing certain services due to perceived religious or cultural taboos surrounding childbirth or reproductive health.

These social and cultural barriers are likely to contribute to low utilization of maternal and newborn care services.

*“Religion and cultural norms deeply rooted in society can significantly impact women's decision-making regarding reproductive health. Religious beliefs, customs, and traditional practices may discourage seeking care during pregnancy and childbirth, leading to delayed or inadequate utilization of essential services. Addressing these cultural barriers requires sensitization efforts that respect local traditions and engage religious leaders and community influencers to promote the importance of maternal and newborn care within the context of religious and cultural norms.” (FGD-CL, 2023)*

Another theme that emerged is the poor attitudes and perceptions towards maternal and newborn care services. These included negative attitudes among healthcare providers, lack of empathy, disrespectful or abusive treatment of women during childbirth, and a general lack of trust in the healthcare system. These poor attitudes create a deterrent for women to seek care, leading to reduced utilization of essential maternal and newborn services.

Poor attitudes and perceptions towards maternal and newborn care services pose significant challenges. Healthcare providers' negative attitudes and disrespectful treatment not only undermine women's confidence in seeking care but also violate their rights to dignified healthcare. Addressing this issue requires comprehensive training programs for healthcare providers, emphasizing respectful and compassionate care, and fostering patient-centered approaches. Strengthening the healthcare system's accountability mechanisms and promoting women's empowerment can also contribute to changing these negative attitudes and improving service utilization.

The qualitative analysis of maternal and newborn care services in South Sudan highlights significant cultural and social barriers impacting service utilization. Deep-rooted religious and cultural norms significantly influence women's attitudes and behaviors towards reproductive health, often discouraging them from seeking essential care during pregnancy and childbirth due to perceived taboos. Addressing these barriers requires culturally sensitive sensitization efforts, engaging religious and community leaders to promote the importance of maternal and newborn care within the context of local traditions. Additionally, the analysis reveals that negative attitudes and disrespectful treatment by healthcare providers further deter women from utilizing these services. Such treatment not only undermines women's confidence in the healthcare system but also violates their rights to dignified healthcare.

Improving service utilization necessitates comprehensive training programs for healthcare providers, emphasizing respectful and compassionate care, and fostering patient-centred approaches. Strengthening accountability mechanisms within the healthcare system and promoting women's empowerment are also crucial strategies to overcome these challenges and enhance the overall quality and accessibility of maternal and newborn care services. This synthesis underscores the need for a multifaceted approach to address both cultural barriers and healthcare provider attitudes to improve maternal and newborn health outcomes in South Sudan.

The theme of affordability and financial constraints highlights the financial barriers that women face in accessing maternal and newborn care services. Inadequate financial resources can limit women's ability to afford transportation costs, medical fees, medications, or other associated expenses related to RHS. This economic barrier can significantly impede access and utilization, particularly among marginalized and economically disadvantaged populations.

*“The affordability and financial constraints associated with maternal and newborn care services are critical barriers that need to be addressed. Strategies such as subsidizing or eliminating user fees, implementing health insurance schemes, and providing targeted financial assistance to vulnerable populations can help alleviate the financial burden on women and encourage greater utilization of services.” (KI-PHW, 2023)*

The qualitative finding regarding the influence of religion and cultural norms on the utilization of maternal and newborn care services carries significant implications for the main objective of the study. This insight delves into the intricate web of social and cultural factors that impact reproductive health behaviors in South Sudan. Understanding how these norms shape individuals' attitudes and behaviors is crucial for developing targeted interventions that promote greater uptake and utilization of maternal and newborn care services.

The identification of religion and cultural norms as influential factors highlight the need for a culturally sensitive approach to reproductive health services in South Sudan. It implies that interventions and policies should be designed with a deep understanding of the local belief systems, respecting and addressing the cultural contexts that shape individuals' decisions regarding maternal and newborn care. The study may explore specific religious and cultural practices that act as barriers and understand how they intersect with healthcare-seeking behaviours.

The finding also suggests that certain reproductive health services might be stigmatized or discouraged due to perceived religious or cultural taboos. This stigma could contribute to the underutilization of maternal and newborn care services. To address this, the study could further investigate the nature and extent of stigma associated with specific services, identifying strategies to destigmatize and promote a more positive perception of these services within the community.

Moreover, the acknowledgment of social and cultural barriers aligns with the broader goal of reproductive health equity. It implies that certain groups of women may face additional challenges in accessing maternal and newborn care services due to these norms. Therefore, the study may consider conducting a detailed analysis of how these barriers disproportionately affect different subgroups within the population, such as women from specific religious or cultural backgrounds, and explore strategies to ensure equitable access.

The findings reveal that inadequate financial resources hinder women from affording essential costs associated with RHS, such as transportation, medical fees, and medications. These financial constraints particularly affect marginalized and economically disadvantaged populations, severely impeding their access to necessary care. Addressing these barriers requires targeted strategies, including subsidizing or eliminating user fees, implementing health insurance schemes, and providing financial assistance to vulnerable groups to alleviate the economic burden and encourage greater utilization of maternal and newborn care services.

The analysis also highlights the profound impact of religious and cultural norms on the utilization of maternal and newborn care services. These norms often discourage women from seeking necessary care due to perceived taboos and stigmas surrounding reproductive health, contributing to the underutilization of these services. This insight emphasizes the need for a culturally sensitive approach in designing interventions and policies. Understanding the local belief systems and addressing the cultural contexts that influence healthcare-seeking behaviours are crucial for promoting greater uptake and utilization of maternal and newborn care services.

Furthermore, the analysis indicates that stigma associated with certain RHS due to religious or cultural beliefs may exacerbate their underutilization. Investigating the nature and extent of this

stigma, and identifying strategies to destigmatize these services, is essential for fostering a more positive perception within the community. The findings also suggest that social and cultural barriers disproportionately affect different subgroups within the population, emphasizing the need for a detailed analysis of how these barriers impact specific groups, such as women from certain religious or cultural backgrounds. Ensuring equitable access to maternal and newborn care services requires addressing these multifaceted barriers through comprehensive, culturally aware strategies that promote reproductive health equity across diverse communities.

#### **4.4.3 Discussion of the Findings**

The finding that 86.3% of the women who visited the selected public health facilities reported not getting all of the RHS they were seeking is striking and suggests significant gaps in service provision. This aligns with the broader context of reproductive health challenges in Sub-Saharan Africa, where resource constraints and systemic barriers often limit access to comprehensive health services (Alamneh et al., 2022; Barbi et al., 2021). The range of services reported as available—family planning (31.7%), prevention and management of STIs (25.1%), maternal and newborn care (18.1%), HIV counselling and testing (15.3%), and others—reflects a focus on essential reproductive health needs but indicates a significant shortfall in comprehensive care.

Comparatively, the availability of services like family planning and STI management in South Sudan aligns with similar trends in other Sub-Saharan African countries, where family planning often receives more emphasis due to its critical role in controlling fertility rates and preventing maternal mortality (WHO, 2021). However, the low availability of services such as prevention and management of gender-based violence (2.8%) and routine gynaecological examinations (1.6%) underscores a gap in addressing the broader spectrum of women's health needs. In contrast,

countries with better healthcare infrastructure, even within the same region, often report higher availability and uptake of these comprehensive services. For instance, Kenya has seen improvements in maternal health service availability through targeted interventions and policy changes (Mochache et al., 2020).

The high unmet need for comprehensive RHS could correlate with systemic issues such as insufficient healthcare funding, inadequate infrastructure, and a shortage of trained healthcare personnel in South Sudan. This finding may also reflect socio-cultural barriers, such as stigma and gender norms, that prevent women from seeking or receiving certain types of care (Sumankuuro et al., 2018). Unexpectedly, the relatively high reported availability of family planning services does not seem to translate into effective utilization, given the high rates of teenage pregnancy and low contraceptive prevalence. This discrepancy could be due to barriers in accessibility, such as cost, distance, or cultural resistance, despite the services being technically available (Kinaro et al., 2019).

These findings align with previous literature highlighting the critical challenges in RHS availability and utilization in resource-poor settings. The World Health Organization (WHO) and United Nations Population Fund (UNPF) have long emphasized the need for comprehensive and accessible reproductive health services to improve health outcomes (WHO, 2021; UNPF, 2019). Furthermore, theoretical frameworks such as the Health Belief Model (HBM) and the Theory of Reasoned Action (TRA) underscore the importance of perceived barriers and social norms in health service utilization (Glanz et al., 2015; Green et al., 2020). These theories help explain why, despite the availability of certain services, utilization remains low due to factors such as perceived susceptibility, perceived severity, and social pressures.

One limitation of the study is the reliance on self-reported data, which may be subject to bias. Additionally, the cross-sectional nature of the data collection does not allow for causal inferences. There is also a need for more granular data to understand the specific reasons behind the high unmet need for RHS. The study underscores the critical gaps in the availability of comprehensive RHS in South Sudan and highlights the complex interplay of socio-cultural, economic, and systemic factors. Addressing these challenges requires a multifaceted approach that includes policy changes, increased funding, community engagement, and targeted interventions to improve health outcomes for women of reproductive age.

The analysis of family planning visits revealed significant seasonal variations and trends over the study period from the first and third quarters of 2015 to the first and third quarters of 2020. The data indicated several peaks and troughs each year, reflecting a cyclical pattern in family planning uptake. Notably, there was a consistent decline in attendance during the third quarter each year, contrasting with a general upward trend in overall family planning visits. The steady increase in family planning visits suggests an overall improvement in the uptake of these services, which could be attributed to enhanced awareness campaigns, improved service delivery, or changes in public health policies. The seasonal declines in the third quarter may be linked to socio-cultural factors, agricultural cycles, or climatic conditions that impact the accessibility and availability of healthcare services during this period (Sumankuuro et al., 2017; Mochache et al., 2020).

The consistent third-quarter decline was unexpected, warranting further investigation into specific barriers that emerged during this period. It is essential to explore whether these declines are due to logistical challenges, cultural practices, or economic activities that limit women's ability to access family planning services during these months. The findings align with the HBM and the TRA by

highlighting the influence of perceived barriers and sociocultural norms on the utilization of reproductive health services (Glanz et al., 2015; Green et al., 2020). Seasonal variations reflect the dynamic interplay of these factors, emphasizing the need for targeted interventions that address specific barriers during particular times of the year.

The trend in HIV counselling and testing visits showed similar seasonal variations, with several peaks and troughs annually. The data indicated a steady increase in the uptake of these services from 2015 to 2020, though a consistent decline was observed during the third quarter. The upward trend in HIV counselling and testing visits points to successful public health initiatives aimed at increasing awareness and reducing the stigma associated with HIV. The third-quarter decline mirrors the pattern observed in family planning visits, suggesting common underlying factors affecting the utilization of reproductive health services during this period.

Similar to family planning visits, the third-quarter decline in HIV counselling and testing was unexpected and requires further exploration. Identifying specific deterrents during this period can inform targeted strategies to maintain service utilization throughout the year. The steady increase in service uptake aligns with the HBM and TRA, illustrating how perceived benefits and social norms influence health-seeking behaviour (Glanz et al., 2015; Green et al., 2020). The seasonal decline underscores the importance of addressing perceived barriers and enhancing cues to action during times of reduced service utilization.

The analysis of maternal and newborn care visits also revealed significant seasonal variations, with peaks and troughs occurring annually. The trend indicated a steady increase in service uptake from 2015 to 2020, despite a consistent decline in attendance during the third quarter. The increasing trend in maternal and newborn care visits reflects improvements in healthcare delivery and

possibly better maternal health policies. The consistent third-quarter decline suggests that external factors, such as weather conditions, socio-economic activities, or healthcare infrastructure challenges, might be influencing service utilization during this period.

The third-quarter decline in maternal and newborn care visits was unexpected and highlights the need for targeted research to identify and address specific barriers affecting service utilization during this time. The findings resonate with the principles of the HBM and TRA, emphasizing the impact of perceived susceptibility, severity, and barriers on health-seeking behaviour (Glanz et al., 2015; Green et al., 2020). The seasonal patterns observed indicate the necessity for adaptive healthcare strategies that consider the socio-cultural and environmental context of service delivery.

The study's findings provide valuable insights into the trends and seasonal components of reproductive health service utilization in South Sudan. The observed patterns underscore the importance of addressing socio-cultural and environmental barriers to enhance the accessibility and quality of reproductive health services. By aligning these findings with theoretical frameworks such as the HBM and TRA, policymakers and healthcare providers can develop more effective strategies to improve reproductive health outcomes in similar contexts globally.

The research findings indicate a regular utilization of family planning services among women of reproductive age in South Sudan's public health facilities. This aligns with the assertions by Geary et al. (2014) and Sumankuuro et al. (2018), who highlight the critical role of knowledge and social norms in influencing reproductive health behaviours. The participants noted the availability of a range of modern contraceptive methods, such as intrauterine devices, oral contraceptives, condoms, injectables, emergency contraceptive pills, and spermicidal agents.

Compared to studies conducted in South Africa and Ethiopia, where only 38.5% and 21.5% of adolescents, respectively, possessed adequate knowledge of RHS (Ninsiima et al., 2021), South Sudan shows a promising trend in the awareness and utilization of family planning services. However, this contrasts with findings from other Sub-Saharan African countries, where access to these services remains significantly constrained due to sociocultural and economic barriers (Mkandawire & Hendriks, 2018; Mafuta et al., 2018).

The regular utilization of family planning services signifies an important step towards reducing unintended pregnancies and improving maternal health outcomes. This uptake can be attributed to ongoing efforts to enhance the availability and accessibility of RHS in public health facilities. It reflects a positive shift in addressing the unmet need for family planning, which remains a significant challenge in Sub-Saharan Africa (United Nations, 2019). The findings align with the HBM, which emphasizes the role of perceived benefits and susceptibility in motivating health behaviour. The regular utilization indicates that women in South Sudan recognize the benefits of family planning in preventing unintended pregnancies and improving their reproductive health outcomes. This recognition is crucial in overcoming perceived barriers such as myths and misconceptions about contraception, as highlighted by Binu et al. (2018).

Participants in the study reported a regular uptake and utilization of HIV counseling and testing services, driven by the need to know their HIV status. This finding is consistent with the Health Belief Model, where perceived susceptibility and severity play critical roles in influencing health behaviours (Green et al., 2020). Similar to findings from Kenya and Uganda, where HIV testing and counseling are actively sought due to increased awareness and availability of services (Mochache et al., 2020; Atuyambe et al., 2015), South Sudanese women also demonstrate

proactive health-seeking behaviors. However, unlike these countries, South Sudan faces a significant shortage of trained personnel in HIV testing and counseling, which hampers service delivery.

The regular uptake of HIV counseling and testing services is pivotal in the early detection and management of HIV, contributing to improved health outcomes and reduced transmission rates. Addressing the shortage of trained personnel is critical to sustaining and enhancing these services. This finding reinforces the TRA, which posits that intention and subjective norms significantly influence behaviour. The positive attitudes towards HIV testing, coupled with supportive social norms, drive the regular utilization of these services. The study's findings highlight the need for continuous training and capacity-building initiatives to address the personnel shortage and ensure comprehensive service delivery (Glanz et al., 2015).

The research identified religion and cultural norms as significant barriers to the utilization of maternal and newborn care services. This finding is consistent with the literature, which emphasizes the profound impact of socio-cultural factors on healthcare access and utilization (Lodenstein et al., 2018; Pell et al., 2011). While studies in Kenya and Nigeria have also highlighted the role of cultural and religious norms in shaping reproductive health behaviours (Mochache et al., 2020; Ayehu et al., 2016), the intensity and nature of these barriers vary. In South Sudan, these norms are deeply entrenched, discouraging women from seeking essential maternal and newborn care services due to perceived taboos and societal expectations.

The underutilization of maternal and newborn care services due to cultural and religious barriers has severe implications for maternal and child health. It contributes to high maternal mortality rates and poor health outcomes for newborns. Addressing these barriers is crucial for improving

service uptake and health outcomes. The findings align with the Health Belief Model, where perceived barriers significantly hinder health behaviour. Overcoming these barriers requires culturally sensitive interventions that respect local traditions while promoting the importance of maternal and newborn care. Engaging religious and community leaders in advocacy efforts can help shift norms and encourage positive health-seeking behaviours (Sumankuuro et al., 2018; Yamin et al., 2015).

The findings underscore the need for targeted policies and interventions to enhance the availability, accessibility, and quality of RHS. Strategies should include capacity-building for healthcare providers, culturally sensitive health education campaigns, and community engagement to address socio-cultural barriers. Addressing these determinants holistically can improve RH outcomes and reduce maternal mortality rates.

#### **4.5 Changes in Weather Season and Utilization of Reproductive Health Services**

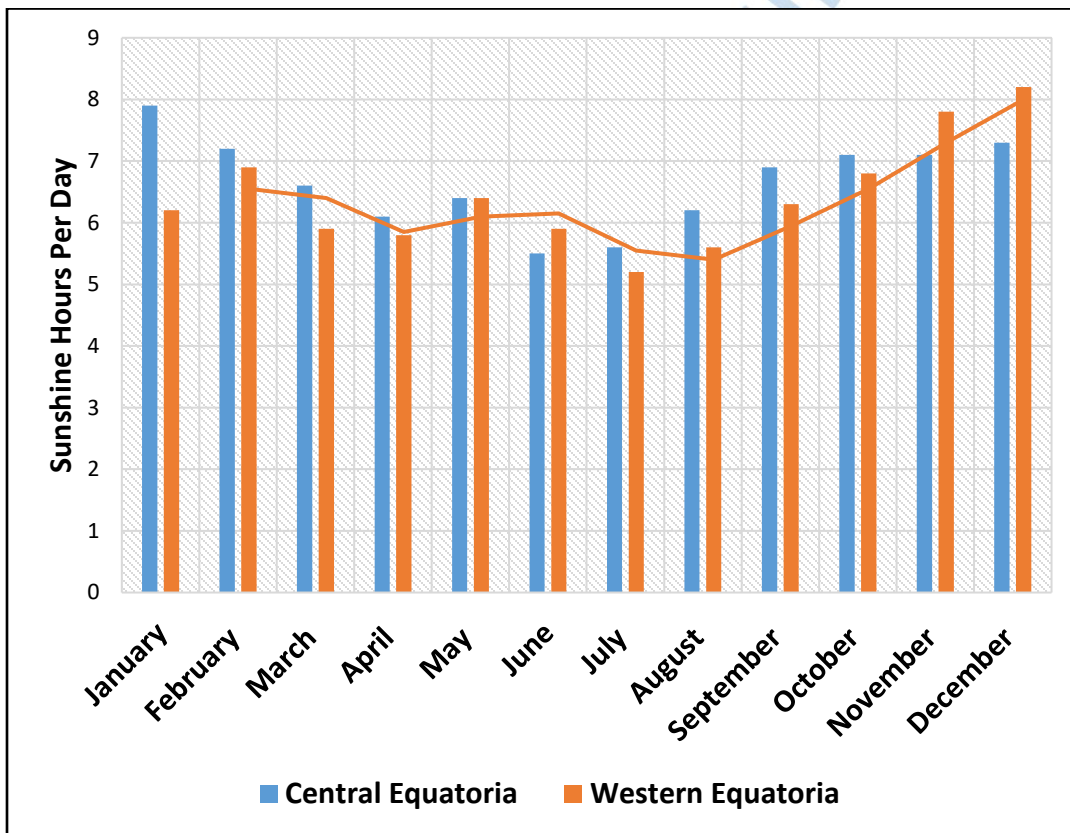
The specific objective of the research study was to investigate the relationship between changes in weather seasons and the utilization of RHS among women of reproductive age in selected public health facilities in Central Equatoria and Western Equatoria States, South Sudan. To explore the relationship between weather seasonality and utilization of RHS, the researcher analyzed the data from 2015 to 2020, focusing on Quarter 1 (dry season: January to April) and Quarter 3 (rainy season: August to November). These quarters were chosen as they represent a comparison between different weather conditions and are crucial for establishing a relationship between weather seasonality and utilization of RHS.

#### 4.5.1 Quantitative Analysis for Changes in Weather Season and Utilization of Reproductive Health Services

The relationship between Changes in Weather Season and Utilization of RHS was established by collecting data from the local community using a structured questionnaire, and a longitudinal ecological study.

##### 4.5.1.1 Weather Patterns in Central Equatoria and Western Equatoria

###### Central Equatoria



*Figure 4. 5: Sunshine pattern in Central Equatoria and Western Equatoria*  
*Source: Research Data (2023)*

Located at an elevation of 613.3 meters (2012.14 feet) above sea level, Central Equatoria has a Tropical wet and dry or savanna climate. The findings show that the State's yearly temperature is 29.52°C (85.14°F) and it is 0.02% higher than South Sudan's averages. Central Equatoria typically receives about 130.25 millimetres (5.13 inches) of precipitation and has 197.45 rainy days (54.1% of the time) annually (see Figure 4.5).

The annual temperature in Central Equatoria, which is slightly higher than South Sudan's average, may impact individuals' health-seeking behaviours. Warmer temperatures can affect the timing and frequency of health facility visits, especially for maternal and reproductive health services. Moreover, the amount of precipitation and the number of rainy days annually in Central Equatoria can influence the mobility and accessibility of healthcare services. Seasonal variations in precipitation may affect the roads' condition, transportation, and overall health facility utilization.

The climate data for Central Equatoria outlined in Figure 4.5 have implications for understanding the relationship between weather seasons and the utilization of reproductive health services. It provides valuable information for recognizing the potential barriers and facilitators associated with climate and weather conditions in the study area. Policymakers and healthcare providers can use this knowledge to adapt their services and outreach efforts to better serve the community, especially during times when weather conditions may impact service accessibility.

The detailed information on weather patterns in Central Equatoria, with its elevation of 613.3 meters and a Tropical wet and dry or savanna climate, adds a crucial contextual layer to understanding the dynamics of reproductive health service utilization. The state's yearly temperature, slightly higher than the South Sudan average, is an environmental factor that could impact the health-seeking behaviours of individuals. Warmer temperatures, as indicated, have the

potential to influence the timing and frequency of health facility visits, particularly for maternal and reproductive health services. This could be attributed to the discomfort associated with high temperatures, potentially affecting individuals' willingness or ability to travel to health facilities.

The data on precipitation and rainy days in Central Equatoria are equally significant for understanding the challenges and opportunities related to healthcare service accessibility. The state receives about 130.25 millimetres of precipitation annually, with 197.45 rainy days, accounting for 54.1% of the time. These weather patterns can have substantial implications for the mobility and accessibility of healthcare services. Seasonal variations in precipitation levels may impact road conditions, transportation options, and overall health facility utilization. In regions where infrastructure and road maintenance may be limited, heavy rainfall or poor road conditions during the rainy season could impede access to healthcare facilities, potentially leading to disruptions in reproductive health service utilization.

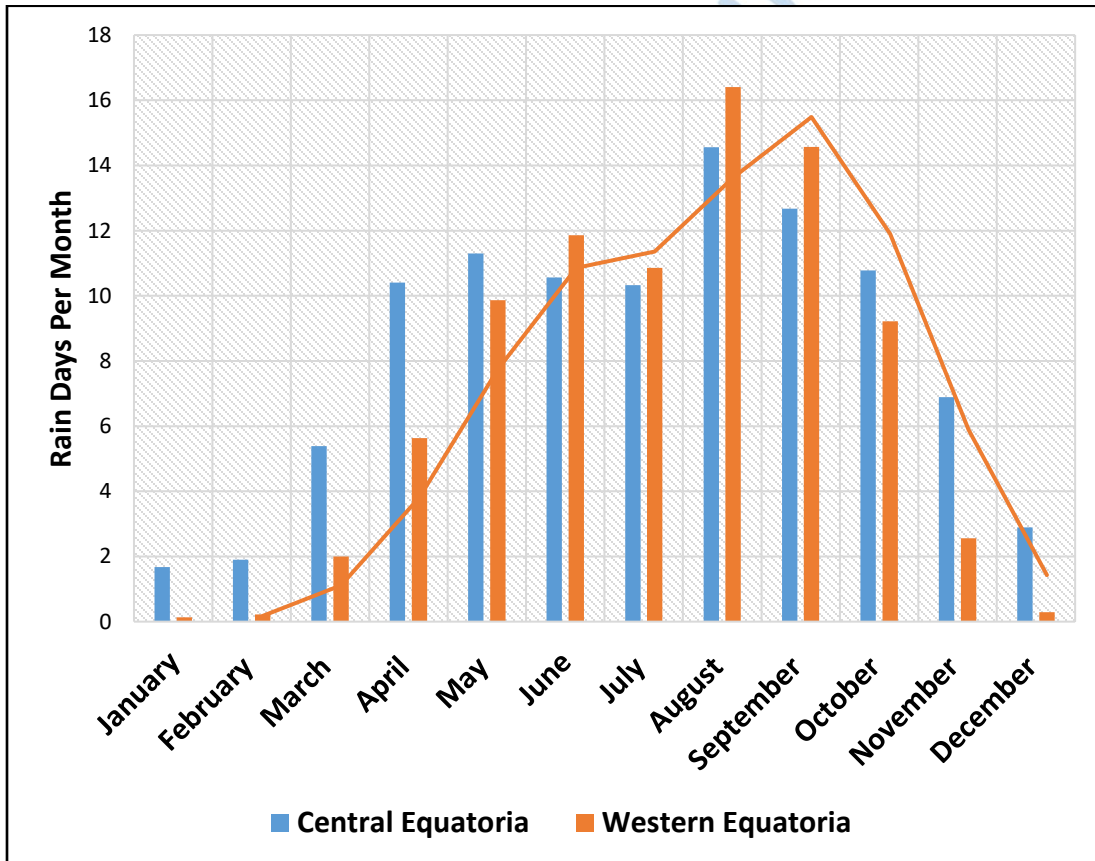
Understanding these weather-related factors is crucial for designing and implementing effective interventions to improve reproductive health outcomes. For instance, during periods of inclement weather, it may be necessary to implement strategies such as mobile health services, community outreach, or awareness campaigns to ensure continued access to reproductive health services. Additionally, health facilities may need to plan for seasonal variations, ensuring that infrastructure is resilient to weather conditions and that services remain accessible even during challenging times.

In summary, the weather patterns outlined for Central Equatoria provide valuable insights into the environmental context in which reproductive health services are sought and utilized. Recognizing the potential impact of temperature and precipitation on health-seeking behaviours, infrastructure,

and accessibility is essential for tailoring interventions and policies that effectively address the unique challenges posed by the region's climate.

### Western Equatoria

Located at an elevation of 636.91 meters (2089.6 feet) above sea level, Western Equatoria has a Tropical wet and dry or savanna climate. The findings establish that the State's yearly temperature is 27.25°C (81.05°F) and it is -2.25% lower than South Sudan's averages. Western Equatoria typically receives about 203.23 millimetres (8.0 inches) of precipitation and has 223.82 rainy days (61.32% of the time) annually (see Figure 4.6).



**Figure 4. 6:** Rain pattern in Central Equatoria and Western Equatoria  
*Source: Research Data (2023)*

The lower annual temperature in Western Equatoria compared to South Sudan's averages could influence the timing of health facility visits. Lower temperatures might encourage more outdoor activities, which can impact healthcare-seeking behaviours. Rainy seasons can pose challenges to women seeking reproductive health services. Heavy rainfall may lead to inaccessible roads, hindering individuals' ability to reach healthcare facilities. Understanding these weather-related barriers is crucial for addressing service utilization issues.

The climate data for Western Equatoria presented in Figure 4.6 have implications for understanding the relationship between weather seasons and the utilization of reproductive health services. It provides valuable information for recognizing the potential barriers and facilitators associated with climate and weather conditions in the study area. Policymakers and healthcare providers can use this knowledge to adapt their services and outreach efforts to better serve the community, particularly during times when weather conditions may impact service accessibility.

The selected RH services data of respondents attending the RHS clinic was plotted against a period of 2015 to 2020 focusing on Quarter 1 and Quarter 3 (see Figures 4.4, 4.5 and 4.6). These two quarters represent a comparison between the dry (January to April) and rainy (August to November) seasons in Central Equatoria and Western Equatoria essential for establishing the relationship between weather season and utilization of RHS.

The findings show that there are some seasonal differences of uptake and utilization of RHS in the first and third quarters all through 2015 to 2022 with a consistent decline in uptake of RHS during the third quarters. This coincides with the rainiest seasons of August and September where there are high chances of experiencing flooding. The findings imply that there are long-lasting impacts on the uptake and utilization of RHS after a climate event such as flooding takes place. It was

further established that disruptions in people's household and public health facilities was likely to compromise the uptake and utilization of RHS across the selected public health facilities.

The detailed information on the weather patterns in Western Equatoria, characterized by a Tropical wet and dry or savanna climate with an elevation of 636.91 meters, provides valuable insights into the environmental context in which reproductive health services are sought. The state's yearly temperature, slightly lower than the South Sudan average, is a noteworthy factor that may impact health-seeking behaviours. Lower temperatures, as indicated, could encourage more outdoor activities, potentially influencing the timing and frequency of health facility visits. Understanding these temperature-related dynamics is essential for designing interventions that align with the local climate and population behaviours.

The data on precipitation and rainy days in Western Equatoria are particularly relevant for understanding the challenges associated with reproductive health service utilization. The state receives about 203.23 millimetres of precipitation annually, with 223.82 rainy days, accounting for 61.32% of the time. The significant number of rainy days, especially during the rainy season, can pose challenges to women seeking reproductive health services. Heavy rainfall has the potential to lead to inaccessible roads, creating barriers to healthcare facility access. During periods of intense rainfall, individuals may face transportation difficulties, which could impede their ability to reach health facilities, particularly for maternal and reproductive health services.

Understanding these weather-related barriers is crucial for addressing service utilization issues in Western Equatoria. It highlights the need for context-specific strategies to overcome challenges posed by climatic conditions. For instance, health facilities may need to implement measures to ensure accessibility during the rainy season, such as improving road infrastructure, enhancing

transportation options, or employing mobile health services to reach remote areas. Additionally, community awareness campaigns could be designed to educate individuals on the importance of continued reproductive health service utilization, even during adverse weather conditions.

In conclusion, the weather patterns outlined for Western Equatoria offer essential insights into the environmental factors influencing reproductive health service utilization. Recognizing the potential impact of temperature and precipitation on health-seeking behaviours and accessibility is crucial for tailoring interventions and policies that effectively address the unique challenges posed by the region's climate.

#### *4.5.1.2 Experiencing Extreme Weather Events in the Past Twelve Months*

The respondents were asked whether they had experienced any extreme weather event(s) in the past 12 months. Findings show that over 35% of women who participated in the study had experienced extreme weather events such as flooding and drought. However, most of the respondents (64.8%, 259) reported that they had not experienced extreme weather events in the past 12 months. The data indicating that over 35% of the women in the study had experienced extreme weather events like flooding and drought within the past 12 months are crucial for understanding the environmental challenges faced by the community. Experiencing extreme weather events may create barriers to accessing healthcare. Roads may become impassable during floods, and droughts can impact water availability, which is essential for healthcare services.

The findings related to experiences of extreme weather events among the respondents are essential for assessing the relationship between weather changes and reproductive health service utilization. Extreme weather events can significantly impact healthcare access, and recognizing these

challenges is crucial for planning and implementing effective strategies to ensure the continuity of reproductive health services, especially during adverse weather conditions. The study may further investigate how the community copes with and adapts to these events to maintain service utilization. All of the women who reported that they experienced extreme weather events in the past 12 months, further reported that they had been constrained to access RH services clinics due to the extreme weather conditions, especially flooding. The findings show that an increase in the frequency of flooding is likely to create a complex and challenging environment for the uptake and utilization of RHS, particularly in rural areas of Central Equatoria and Western Equatoria.

The finding that over 35% of women who participated in the study reported experiencing extreme weather events in the past 12 months, including flooding and drought, holds significant implications for the main objective of the study. Extreme weather events can have profound effects on the overall health-seeking behaviours and reproductive health service utilization of women in the region. Firstly, the experience of extreme weather events, such as flooding, can disrupt transportation infrastructure and accessibility to healthcare facilities. Flooded roads and disrupted transportation systems can hinder women's ability to reach public health facilities, particularly during emergencies or when seeking time-sensitive reproductive health services. This limitation in mobility may result in delayed or inadequate access to critical reproductive health care, impacting the overall health outcomes for women.

Moreover, the psychological and emotional toll of experiencing extreme weather events may influence women's priorities and decision-making regarding health-seeking behaviors. In the aftermath of such events, individuals may prioritize immediate concerns related to shelter, food, and safety over routine or preventive healthcare visits. This shift in priorities may contribute to a

decrease in the utilization of reproductive health services, as women focus on addressing the more immediate consequences of extreme weather events.

The study should consider exploring the specific ways in which extreme weather events affect the utilization of reproductive health services. This could involve qualitative research to capture the nuanced experiences and challenges faced by women in accessing healthcare during and after extreme weather events. Understanding the context-specific factors that influence health-seeking behaviors in the aftermath of such events will be crucial for designing targeted interventions and policies that address the unique challenges posed by extreme weather conditions. Additionally, the findings underscore the importance of building climate-resilient healthcare systems that can adapt to and mitigate the impacts of extreme weather events. This might involve strategies such as improving infrastructure, enhancing emergency preparedness and response mechanisms, and incorporating climate considerations into reproductive health service planning.

In conclusion, the experience of extreme weather events reported by a significant proportion of women in the study highlights the need for a comprehensive understanding of the complex interplay between climate-related factors and reproductive health service utilization. Addressing these challenges requires context-specific interventions that not only respond to immediate post-event needs but also contribute to the long-term resilience of healthcare systems in the face of changing climate conditions.

## 4.5.2 Qualitative Analysis for Changes in Weather Season and Utilization of Reproductive Health Services

The thematic analysis highlights the significant influence of extreme weather events on the utilization and uptake of reproductive health services in Western Equatoria and Central Equatoria States in South Sudan.

### 4.5.2.1 Impact of Extreme Weather Events

The theme identified is the impact of extreme weather events, including drought and flooding, on the utilization and uptake of RHS. The weather conditions in Western Equatoria and Central Equatoria States, characterized by very cold temperatures during the rainy season and hot temperatures during the dry seasons, pose challenges for women seeking RHS. The extreme cold weather during the rainy season hinders women's willingness to go out and visit reproductive health clinics, potentially leading to reduced utilization. Similarly, floods resulting from heavy rains can disrupt transportation routes, making it difficult for women to access public health facilities and avail of RHS.

*“The extreme cold weather during the rainy season acts as a deterrent for women seeking reproductive health services. It creates discomfort and poses health risks, making it less likely for women to venture out to access public health facilities. Addressing this challenge requires strategies such as improving the availability and accessibility of services closer to communities, including outreach programs and mobile clinics, to mitigate the impact of extreme cold weather on service utilization.” (FGD-Media, 2023)*

The qualitative finding that extreme weather events, particularly the extreme cold weather during the rainy season, act as deterrents for women seeking reproductive health services in Western Equatoria and Central Equatoria States in South Sudan has crucial implications for the main objective of the study. The identified theme underscores the need for targeted interventions to address the specific weather-related barriers that impact reproductive health service utilization. The discomfort and health risks associated with extreme cold weather during the rainy season highlight the importance of tailoring reproductive health services to the climatic conditions of the region. Strategies such as implementing outreach programs and mobile clinics that bring services closer to communities can mitigate the impact of extreme weather on women's willingness to seek reproductive health care. By making services more accessible, these interventions can contribute to overcoming weather-related challenges and improving overall service utilization.

The qualitative finding emphasizes the importance of community-based approaches that take into account the local context and weather patterns. Understanding the specific concerns and preferences of women in response to weather conditions is essential for designing culturally sensitive and effective reproductive health programs. The insights from the focus group discussion with media representatives highlight the necessity of community engagement and collaboration in identifying and implementing strategies that address the unique challenges posed by extreme weather events. Moreover, the finding suggests that a multifaceted approach is needed to enhance reproductive health service utilization in the context of extreme weather. This could involve not only improving the geographical accessibility of services but also implementing educational campaigns to inform women about the availability and benefits of reproductive health services, regardless of weather conditions. Empowering women with knowledge and addressing

misconceptions related to extreme weather may positively influence their health-seeking behaviors.

Additionally, the qualitative data encourages further exploration of the interconnected factors that contribute to weather-related barriers, including socio-cultural norms, economic considerations, and healthcare infrastructure. This comprehensive understanding can inform the development of comprehensive policies and interventions that consider the broader determinants of reproductive health service utilization in the face of extreme weather events. The qualitative finding highlights the need for a nuanced and context-specific approach to address the impact of extreme weather events on reproductive health service utilization. By integrating community perspectives, tailoring interventions to local weather patterns, and considering the broader determinants, the study can contribute valuable insights for the development of targeted and effective strategies to improve reproductive health outcomes in the studied regions of South Sudan.

The qualitative analysis reveals a profound impact of extreme weather events, particularly drought and flooding, on the utilization and uptake of RHS in the Western Equatoria and Central Equatoria States of South Sudan. The regions experience very cold temperatures during the rainy season and extremely hot temperatures during the dry season, presenting unique challenges for women seeking RHS. During the rainy season, the extreme cold weather significantly deters women from visiting reproductive health clinics. The discomfort and health risks associated with cold weather reduce the willingness of women to venture out to access RHS, as highlighted by a focus group discussion participant who emphasized the need for strategies to address these challenges (FGD-Media, 2023). This reduced mobility during the cold season directly correlates with lower utilization rates of RHS, potentially leading to adverse reproductive health outcomes.

Additionally, heavy rains during the rainy season cause flooding, which disrupts transportation routes and further complicates access to public health facilities. Women face physical barriers in reaching clinics, and the damaged infrastructure hinders the consistent delivery of healthcare services. Flooding exacerbates the isolation of communities, particularly in remote areas, making it challenging to maintain regular access to RHS. In the dry season, the extreme heat poses different but equally significant barriers. While the analysis focused more on the rainy season's impact, it is implied that high temperatures during the dry season can also affect health-seeking behaviours and the functioning of health facilities.

To mitigate these impacts, the qualitative analysis suggests implementing strategies such as improving the availability and accessibility of RHS closer to communities. This includes establishing outreach programs and mobile clinics, which can provide essential services without requiring women to travel long distances in harsh weather conditions. These interventions aim to maintain consistent access to RHS regardless of weather conditions, ensuring that women receive the necessary care for their reproductive health. In summary, the qualitative findings underscore the critical need to adapt RHS delivery to the environmental challenges posed by extreme weather events in South Sudan. By enhancing service accessibility and implementing targeted outreach efforts, the negative impact of severe weather on RHS utilization can be alleviated, contributing to improved reproductive health outcomes for women in these regions.

#### *4.5.2.2 Limited Access to Reproductive Health Services*

Another theme revolves around limited access to RHS due to extreme weather conditions. The cold weather during the rainy season may discourage women from venturing outside their homes, especially for non-emergency services like reproductive health. Additionally, floods can render

roads impassable, making it challenging for women to travel to public health facilities. These access barriers limit the utilization of RHS and negatively impact the overall reproductive health outcomes for women of reproductive age.

*“Floods resulting from heavy rains further exacerbate the barriers to RHS. The disruption of transportation routes and infrastructure makes it challenging for women to access public health facilities, particularly during emergencies or when seeking routine reproductive health services. To address this issue, it is crucial to strengthen the resilience of health systems by improving transportation infrastructure, implementing early warning systems, and establishing contingency plans to ensure continuous service provision during extreme weather events.” (KI-Nurse, 2023)*

The qualitative finding highlighting limited access to reproductive health services (RHS) due to extreme weather conditions, specifically the cold weather during the rainy season and floods, has significant implications for the main objective of the study. The theme emphasizes the direct impact of weather-related barriers on women's ability to access reproductive health services. The reluctance of women to venture outside during the cold weather and the disruption caused by floods highlight the formidable challenges faced by women in accessing RHS, particularly during emergencies or for routine services. This directly aligns with the study's main objective of understanding the factors influencing the uptake and utilization of reproductive health services in selected public health facilities in South Sudan.

The qualitative finding underscores the need for comprehensive strategies to address the specific barriers related to weather conditions. Strengthening the resilience of health systems is crucial, as identified by the key informant (KI) nurse, and involves improving transportation infrastructure,

implementing early warning systems, and establishing contingency plans. These measures are essential for ensuring the continuous provision of reproductive health services even in the face of extreme weather events. By addressing these infrastructure and preparedness issues, the study can contribute insights into how health systems can adapt to weather-related challenges and enhance service accessibility. Moreover, the qualitative data suggests that addressing limited access to RHS requires a multi-stakeholder approach involving both health system strengthening and broader community-level interventions. Collaboration between healthcare providers, policymakers, and communities is vital to implementing effective strategies. Improving transportation infrastructure not only enhances the accessibility of public health facilities but also ensures that women can seek reproductive health services without facing undue challenges during extreme weather conditions.

Furthermore, the finding emphasizes the importance of incorporating climate resilience into reproductive health programs and policies. Understanding and mitigating the impact of extreme weather events on health service utilization should be an integral part of public health planning. By recognizing and addressing these barriers, the study can contribute to the development of evidence-based recommendations for policymakers and program implementers, informing strategies that enhance the overall effectiveness and accessibility of reproductive health services. The qualitative finding on limited access to RHS due to extreme weather conditions provides valuable insights into the complex interplay between environmental factors and reproductive health service utilization. The implications of this theme align with the broader objective of the study by shedding light on specific challenges faced by women in accessing reproductive health services and offering recommendations for targeted interventions to improve service accessibility in the studied regions of South Sudan.

The qualitative analysis highlights the significant challenges posed by extreme weather conditions on access to RHS in South Sudan, focusing on the Western Equatoria and Central Equatoria States. The findings emphasize how cold weather during the rainy season and flooding resulting from heavy rains create substantial barriers for women seeking RHS. During the rainy season, the cold weather discourages women from leaving their homes to access non-emergency reproductive health services. This reluctance is due to the discomfort and health risks associated with cold weather, which reduces the utilization of essential services like family planning, prenatal care, and routine check-ups. The qualitative data underscores that women are less likely to seek RHS under these conditions, leading to poorer reproductive health outcomes.

Flooding, another critical issue during the rainy season, exacerbates these access challenges by rendering roads impassable and disrupting transportation routes. This situation is particularly problematic for women in remote areas who rely on these routes to reach public health facilities. As emphasized by a key informant, the disruption of infrastructure due to floods makes it difficult for women to access RHS, even in emergencies (KI-Nurse, 2023). The inability to reach healthcare facilities during floods severely impacts the continuity of care and the overall reproductive health of women. To address these barriers, the analysis suggests strengthening the resilience of health systems through several measures. Improving transportation infrastructure to withstand extreme weather conditions, implementing early warning systems to prepare for adverse events, and establishing contingency plans to ensure continuous service provision are crucial steps. These strategies aim to maintain access to RHS during extreme weather events, ensuring that women can receive the necessary care regardless of environmental challenges.

In summary, the qualitative findings underscore the urgent need to enhance the accessibility and resilience of reproductive health services in the face of extreme weather conditions in South Sudan. By improving infrastructure and planning for weather-related disruptions, the negative impact on RHS utilization can be mitigated, leading to better reproductive health outcomes for women of reproductive age in these regions.

#### *4.5.2.3 Addressing the Impact of Extreme Weather Events*

Extreme weather conditions, including cold temperatures during the rainy season and floods resulting from heavy rains, pose significant challenges for women seeking reproductive health services in Western Equatoria and Central Equatoria States. To overcome these challenges, community-based awareness and education initiatives should be implemented, focusing on the importance of reproductive health services irrespective of weather conditions. Informational campaigns can dispel myths related to cold weather, emphasizing that seeking reproductive health care remains vital during extreme weather events.

*Mobile and outreach services play a crucial role in enhancing access. Establishing mobile reproductive health clinics that can reach communities during extreme weather conditions ensures that essential services are provided closer to where women live. These services can operate effectively through the development of outreach programs designed to navigate both rainy and dry seasons, ensuring consistent access to reproductive health services. (FGD-K, 2023)*

Introducing telehealth initiatives is another avenue to explore. Remote consultations and support for reproductive health concerns can be facilitated through telehealth, reducing the necessity for

women to travel during extreme weather conditions. Leveraging communication technologies, such as mobile phones, can further disseminate information, provide counseling, and facilitate follow-up care. Investing in infrastructure resilience is paramount. Improving and maintaining transportation infrastructure, coupled with early warning systems, ensures that routes to health facilities remain accessible even during extreme weather events. This multifaceted approach addresses the challenges posed by weather conditions, fostering a resilient reproductive health care system.

The qualitative analysis underscores the significant impact of extreme weather conditions, such as cold temperatures during the rainy season and floods, on the accessibility and utilization of reproductive health services (RHS) in Western Equatoria and Central Equatoria States, South Sudan. To mitigate these challenges, several community-based strategies and service delivery innovations have been proposed. One key approach is the implementation of community-based awareness and education initiatives. These programs aim to emphasize the importance of continuing to seek RHS regardless of adverse weather conditions. Informational campaigns are particularly crucial in dispelling myths and misconceptions about the safety and necessity of accessing reproductive healthcare during extreme weather. By educating communities, these campaigns can encourage women to prioritize their reproductive health even when environmental conditions are unfavorable.

Moreover, mobile and outreach services are highlighted as essential components in enhancing access to RHS during extreme weather events. Establishing mobile reproductive health clinics allows healthcare providers to bring services directly to the communities, circumventing the transportation and infrastructure challenges posed by floods and cold weather. These mobile units

can ensure that essential reproductive health services are consistently available, even in remote and hard-to-reach areas. Outreach programs tailored to navigate both rainy and dry seasons can further enhance the reliability and reach of RHS. Overall, the qualitative analysis emphasizes that addressing the impact of extreme weather events on reproductive health requires a multifaceted approach. Combining community education with innovative service delivery methods like mobile clinics can significantly improve access to RHS, ensuring that women receive the necessary care regardless of weather conditions. By fostering resilience and adaptability in healthcare delivery, these strategies can contribute to better reproductive health outcomes for women in the affected regions.

#### ***4.5.2.4 Addressing Limited Access to Reproductive Health Services***

Empowering local communities is foundational to overcoming limited access to reproductive health services during extreme weather events. Engaging with communities helps identify specific barriers and facilitates community-led solutions. Encouraging dialogue and collaboration between healthcare providers and community members promotes community ownership of reproductive health programs.

*‘Establishing women’s support networks or community health workers proves beneficial. These networks can provide information and assistance to women during extreme weather events, offering peer support and guidance. Training local women as health advocates fosters a sense of community responsibility, encouraging peers to prioritize reproductive health despite weather-related challenges.’ (KI-MO, 2023)*

Infrastructure improvements are crucial. Investing in weather-resistant waiting areas in health facilities ensures women have a comfortable and sheltered space while seeking reproductive health services. Collaborating with local authorities to implement drainage systems and flood mitigation strategies reduces the impact of floods on transportation routes. Developing flexible service delivery models is essential. Adapting to changing weather conditions ensures that reproductive health services remain accessible and responsive to community needs. Community-based distribution points for contraceptives and reproductive health commodities, strategically located to reduce travel distances, can be explored.

Policy advocacy is fundamental to sustainable change. Advocating for policies that prioritize reproductive health service access during extreme weather events and integrating climate resilience considerations into reproductive health programs ensures a robust and adaptable healthcare system. A comprehensive strategy encompassing community engagement, infrastructure improvements, technology integration, and policy advocacy is essential to address the impact of extreme weather events and limited access to reproductive health services in Western Equatoria and Central Equatoria States. Tailored solutions that consider the unique context of these regions will contribute to building resilient and accessible reproductive health care systems.

The qualitative analysis highlights the importance of community empowerment in addressing the limited access to reproductive health services (RHS) during extreme weather events in South Sudan. Engaging with local communities to identify specific barriers and developing community-led solutions is essential for overcoming these challenges. By fostering dialogue and collaboration between healthcare providers and community members, a sense of ownership and responsibility for reproductive health programs is cultivated.

One effective strategy is the establishment of women's support networks and the deployment of community health workers. These networks provide crucial information, assistance, and peer support to women during extreme weather events, ensuring that they have access to RHS despite adverse conditions. Training local women as health advocates is particularly beneficial, as it promotes community responsibility and encourages women to prioritize their reproductive health. These health advocates can offer guidance and support, helping their peers navigate the challenges posed by extreme weather.

By empowering local communities and leveraging their inherent strengths, these approaches not only improve access to RHS but also enhance the resilience of the health system. Community-driven solutions are more likely to be sustainable and effective, as they are tailored to the specific needs and circumstances of the community. This approach fosters a collaborative environment where reproductive health is a shared priority, ultimately leading to better health outcomes for women in the face of extreme weather events.

#### **4.5.3 Discussion of the Findings**

The study findings indicate that both Central Equatoria and Western Equatoria have a Tropical wet and dry or savanna climate. The yearly temperatures in these regions were reported to be 29.52°C (85.14°F) and 27.25°C (81.05°F), respectively. These temperatures show slight variations from the overall averages of South Sudan. For instance, the weather patterns in Central Equatoria and Western Equatoria exhibit notable differences, particularly in precipitation and rainy days. Western Equatoria experiences significantly more rainfall and rainy days compared to Central Equatoria. These variations can have profound implications for the accessibility and utilization of RHS.

Previous studies stipulates that the impacts of weather seasonality appear to be linked to some components of uptake and utilization of RHS more than others. There is strong evidence linking climate change to negative maternal health outcomes, and, generally a lack of access to RHS which in turn negatively impact family planning, abortion, and STI outcomes (Women Deliver, 2021). Our study findings demonstrate that there are seasonal differences in the uptake and utilization of RHS during the first and third quarters throughout the years 2015 to 2022. Importantly, there was a consistent decline in the uptake of RHS during the third quarters, which coincided with the rainiest season of August and September. This suggests that weather events such as heavy rainfall and flooding may have an impact on the utilization of RHS.

Flooding, specifically mentioned in the study findings, can have long-lasting effects on the uptake and utilization of RHS. Previous study share similar findings for instance, study conducted in Bangladesh found that there were increasing incidences of flooding leading to low stocks of contraceptives at health facilities in rural and remote areas (Asian-Pacific Resource & Research Centre for Women, 2014). Another study conducted in Thailand also showed that pregnant women who were displaced due to flooding delivered infants with significant lower birth weights than infants born to women who were not displaced by a natural disaster (Sanguanklin et al., 2014). This current study established that the disruptions caused by flooding can affect public health facilities, making it difficult for individuals to access RHS.

In addition, the study found that a significant proportion of the women surveyed (over 35%) had experienced extreme weather events such as flooding and drought in the past 12 months. These extreme weather events were reported to have constrained their access to reproductive health services, particularly due to the adverse weather conditions, especially during flooding episodes.

Study by Benjamin (2016) found that there are long-lasting impacts on RHS after a climate event such as flooding, takes place. Disruptions in health services can compromise access to contraceptives, maternal and child care treatments and testing for HIV infections and other STIs, among other RHS. Our findings suggest that an increase in the frequency of flooding events may create a complex and challenging environment for the uptake and utilization of RHS, particularly in rural areas of Central Equatoria and Western Equatoria. It emphasizes the need for preparedness and resilience-building strategies to mitigate the impact of extreme weather events on the provision and accessibility of RHS in these regions.

The findings from 2015 to 2020, focusing on Quarter 1 (dry season: January to April) and Quarter 3 (rainy season: August to November), reveal a consistent decline in the uptake of RHS during the rainy season (Quarter 3) across both regions. This trend indicates that increased rainfall and the resulting weather conditions negatively impact the utilization of RHS. Specifically: With 54.1% of the year being rainy, the accessibility of health facilities is likely compromised due to muddy and impassable roads, floods, and logistical challenges in healthcare delivery. The higher percentage of rainy days (61.32%) exacerbates these challenges, potentially leading to even lower utilization rates of RHS during the rainy season.

The higher precipitation and number of rainy days in Western Equatoria correlate with a more significant decline in RHS utilization compared to Central Equatoria. This correlation aligns with the findings of Sanguanklin et al. (2014), who reported that natural disasters and extreme weather conditions disrupt healthcare services and negatively affect maternal and infant health outcomes. An unexpected outcome observed in the data is the steeper decline in RHS utilization in Western Equatoria during the rainy season, despite the region's slightly lower average yearly temperature

compared to Central Equatoria. This outcome suggests that precipitation and the frequency of rainy days play a more critical role than temperature in influencing healthcare accessibility and utilization.

Linking these findings to the existing body of knowledge, studies have highlighted that extreme weather conditions disrupt healthcare services and supply chains, leading to reduced access to essential RH services (Benjamin, 2016; Onyango & Heidari, 2017). The findings also align with the HBM, where perceived barriers—such as impassable roads and inaccessible health facilities due to flooding—hinder individuals from seeking RHS (Green et al., 2020). The study's limitations include the reliance on secondary data, which may not capture all contextual factors influencing RHS utilization. Additionally, the focus on only two states limits the generalizability of the findings to other regions of South Sudan or similar contexts globally. Thus, the implications of these findings are significant for policymakers and healthcare providers. Strategies to mitigate the impact of extreme weather on RHS utilization could include improving infrastructure resilience, establishing mobile health clinics during the rainy season, and strengthening community-based healthcare delivery systems

In the study, it was found that 35.2% of women reported experiencing extreme weather events such as flooding and drought within the past 12 months, while 64.8% did not report such experiences. This finding highlights significant environmental challenges faced by a substantial portion of the community, which could impact their access to healthcare services, including RHS. Comparing the 35.2% of women who experienced extreme weather events with the 64.8% who did not, it's evident that a considerable segment of the population is directly affected by environmental factors. The impact of these events on access to RHS is critical, as extreme weather

can disrupt transportation, infrastructure, and health service delivery. For instance, flooding can render roads impassable and damage health facilities, while droughts can affect water supply, which is essential for maintaining hygiene in healthcare settings (Sorensen et al., 2018; Benjamin, 2016).

In contrast, the majority (64.8%) who did not experience such events might have better access to healthcare services, suggesting that environmental stability plays a crucial role in healthcare utilization. This contrast underscores the importance of disaster preparedness and resilient infrastructure in mitigating the impacts of extreme weather on health service accessibility. The correlation between experiencing extreme weather events and the utilization of RHS can be understood through the HBM. According to the HBM, perceived barriers to health behaviour are significant predictors of health service utilization (Green et al., 2020). Extreme weather events act as substantial barriers, creating physical and logistical challenges that hinder access to RHS. The perception of susceptibility to the negative impacts of such events, combined with perceived severity, can deter women from seeking RHS.

One unexpected outcome was the relatively high percentage (35.2%) of women reporting extreme weather experiences within a single year. This high prevalence indicates a recurring and possibly increasing trend of extreme weather events, which could have long-term implications for public health infrastructure and service delivery in South Sudan. The findings align with existing literature on the impacts of climate change on health services. Previous studies have documented that extreme weather events lead to significant disruptions in healthcare access and quality (Onyango & Heidari, 2017; Women Deliver, 2021). The high percentage of women affected in

this study underscores the urgent need for climate-adaptive strategies in health service planning and delivery.

Applying the HBM to these findings, the perceived barriers created by extreme weather are evident. Women facing such events may perceive accessing RHS as more challenging, which can decrease their perceived benefits of seeking these services. Cues to action, such as health campaigns, need to address these barriers by providing information and support on accessing services during extreme weather conditions. While the study provides valuable insights, it has limitations. The reliance on self-reported data may introduce recall bias, and the cross-sectional design limits the ability to infer causality. Additionally, the study did not account for other potential barriers to RHS utilization, such as socioeconomic status, education level, and cultural factors, which could also influence the findings.

The study highlights the significant impact of extreme weather events on RHS utilization in South Sudan. Addressing these challenges requires a multi-faceted approach involving improved infrastructure, targeted health education, and robust disaster response strategies. By understanding and mitigating the barriers posed by extreme weather, it is possible to improve reproductive health outcomes for women in vulnerable regions.

The analysis reveals that extreme weather events, particularly the cold temperatures during the rainy season and flooding, significantly impede the utilization of RHS in Western Equatoria and Central Equatoria States. The discomfort and health risks associated with cold weather discourage women from visiting reproductive health clinics, while floods disrupt transportation routes, making it challenging to access public health facilities. These findings align with the literature that highlights the negative impacts of climate change on health service delivery (Benjamin, 2016;

World Meteorological Organization, 2020). The barriers presented by extreme weather events underscore the need for adaptive strategies to maintain service provision during adverse conditions.

Limited access to RHS due to extreme weather conditions is a recurrent theme. The cold weather during the rainy season and impassable roads due to floods restrict women's ability to seek non-emergency reproductive health services. This limitation contributes to poorer reproductive health outcomes, as consistent access to services is crucial for preventing and managing reproductive health issues. The literature corroborates these findings, emphasizing that infrastructure challenges and climate-related disruptions significantly hinder healthcare access (Onyango & Heidari, 2017; Sanguanklin et al., 2014). Addressing these access barriers is critical for improving reproductive health outcomes in climate-vulnerable regions.

The discussion highlights the importance of community-based awareness and education initiatives to address the impact of extreme weather on RHS utilization. Informational campaigns can dispel myths related to cold weather and emphasize the importance of seeking reproductive health care regardless of weather conditions. Additionally, mobile and outreach services are pivotal in enhancing access during extreme weather events. These findings are consistent with strategies recommended in the literature, which advocate for community engagement and mobile health services to ensure continuous healthcare delivery during adverse weather conditions (Women Deliver, 2021; Castro, 2020).

Empowering local communities is crucial for overcoming limited access to RHS during extreme weather events. Engaging communities helps identify specific barriers and fosters community-led solutions. Establishing women's support networks and training local women as health advocates

promotes community ownership of reproductive health programs. These strategies align with the Health Belief Model (HBM), which emphasizes perceived benefits and community engagement as critical factors in health behavior adoption (Green et al., 2020). The literature supports the effectiveness of community-based interventions in enhancing healthcare access and outcomes (He et al., 2021; Omer et al., 2021).

The findings on the impact of extreme weather events and limited access to RHS show a clear correlation between adverse weather conditions and reduced healthcare utilization. This relationship is consistent with global research on climate change and health, which indicates that extreme weather disrupts healthcare services and access (Benjamin, 2016; Women Deliver, 2021). However, the emphasis on community empowerment and mobile services as solutions highlights a proactive approach that is less frequently discussed in the existing literature. These strategies offer a potential pathway for mitigating the adverse effects of climate change on RHS.

An unexpected outcome is the strong emphasis on community-led solutions and the significant role of women's support networks in overcoming access barriers. This finding underscores the importance of social support systems in enhancing healthcare utilization, which is a less explored area in previous studies focused primarily on infrastructural and systemic barriers (Grace et al., 2015). The success of these community-driven approaches suggests that integrating social and cultural dimensions into healthcare interventions can enhance their effectiveness.

Situating these findings within the existing body of knowledge, the study aligns with the broader literature on the impact of climate change on health services and the importance of adaptive strategies (Plesons et al., 2019; Kathryn Grace, 2017). The application of the HBM provides a theoretical lens to understand the individual and community factors influencing RHS utilization.

The model's constructs, such as perceived barriers and benefits, help explain the observed behaviors and inform targeted interventions.

The study's findings highlight the critical need for adaptive healthcare strategies to address the challenges posed by extreme weather events. The emphasis on community engagement and mobile services offers practical solutions for enhancing RHS access. However, the study has limitations, including the potential for bias in qualitative data collection and the need for more comprehensive quantitative data to validate the findings. Future research should focus on longitudinal studies to assess the long-term impact of these interventions and explore the integration of climate resilience into healthcare planning.

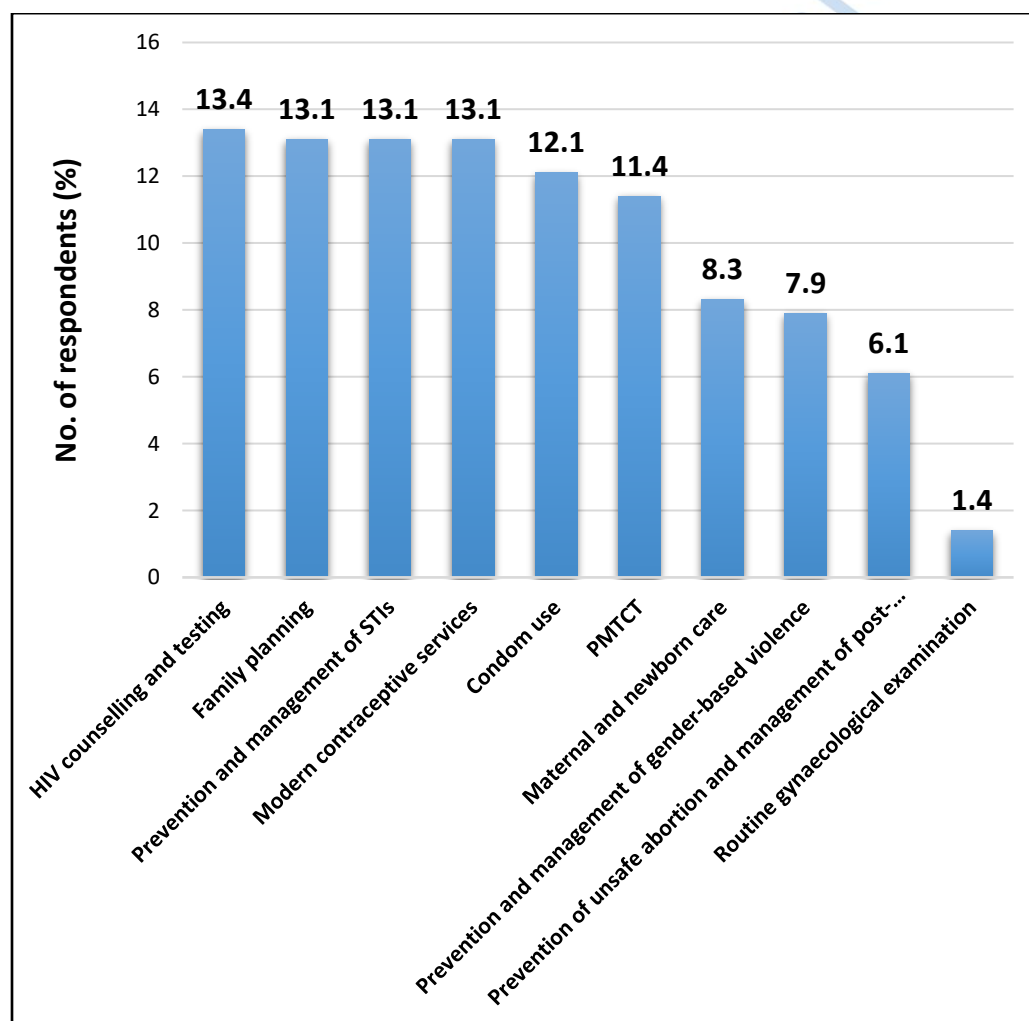
#### **4.6 Socio-Cultural Factors and Utilization of Reproductive Health Services**

Socio-cultural factors encompass various aspects of individuals' social and cultural contexts that can shape their attitudes, beliefs, and behaviours related to reproductive health. These factors can include age, place of residence (urban or rural), education status, cultural norms, religious beliefs, gender roles, and social support systems, among others. This section will present socio-cultural factors that are likely to influence the uptake and utilization of RHS in the selected public health services.

## 4.6.1 Quantitative Analysis for Socio-Cultural Factors and Utilization of Reproductive Health Services

### 4.6.1.1 Awareness of Reproductive Health Services

Respondents showed that they had a wide range of awareness about various RH services offered across the public health facilities including HIV counselling and testing; family planning; prevention and management of STIs; modern contraceptive services; condom use; and PMTCT (see figure 4.7).



**Figure 4. 7:** Awareness of reproductive health services

**Source:** Research Data (2023)

The range of awareness among respondents about different reproductive health services provided in public health facilities is a crucial factor for understanding the level of service uptake. A high level of awareness about specific services may positively correlate with their utilization. For instance, if respondents are well-informed about family planning methods or HIV counseling and testing, they are more likely to utilize these services.

The results indicate that reproductive health services like HIV counseling and testing, family planning, and STI prevention and management are well-recognized by a significant portion of the respondents. This suggests that these services may have higher utilization rates. The findings suggest that there is an opportunity to leverage the existing awareness among respondents for more effective communication and education programs, which could further enhance the utilization of reproductive health services.

The findings regarding awareness of various reproductive health services are essential for assessing the level of service uptake and understanding the sociocultural factors influencing utilization. High awareness levels can be indicative of the potential for increased service utilization, provided that sociocultural barriers do not hinder access. The study may explore how awareness varies among different demographic groups and how it can be leveraged to enhance reproductive health service utilization.

The findings indicating a wide range of awareness among respondents about various RHS offered across public health facilities hold significant implications for the main objective of the study. The awareness reported by respondents encompasses critical components of reproductive health, including HIV counselling and testing, family planning, prevention and management of STIs,

modern contraceptive services, condom use, and PMTCT. This comprehensive awareness reflects a fundamental understanding of the array of reproductive health services available.

High awareness levels among respondents suggest a positive trend in disseminating information about reproductive health services in the studied regions. This can be attributed to effective health education campaigns, community outreach initiatives, and communication strategies employed by public health facilities and relevant stakeholders. The implication is that these awareness efforts have been successful in reaching the target population, ensuring that women of reproductive age are informed about the diverse reproductive health services offered.

The broad awareness about specific services, such as HIV counselling and testing, family planning, and STI prevention and management, aligns with the main objective of the study, which likely aims to understand the utilization patterns of these key reproductive health services. High awareness often serves as a precursor to service utilization, indicating that women are not only knowledgeable about the available services but are also potentially inclined to seek and access them when needed. However, it is essential to delve deeper into the qualitative aspects of this awareness. Understanding the sources of information, the clarity of knowledge, and any existing misconceptions or gaps in awareness is crucial for a nuanced interpretation. Qualitative insights could uncover whether the awareness translates into informed decision-making and whether women feel empowered to make choices regarding their reproductive health.

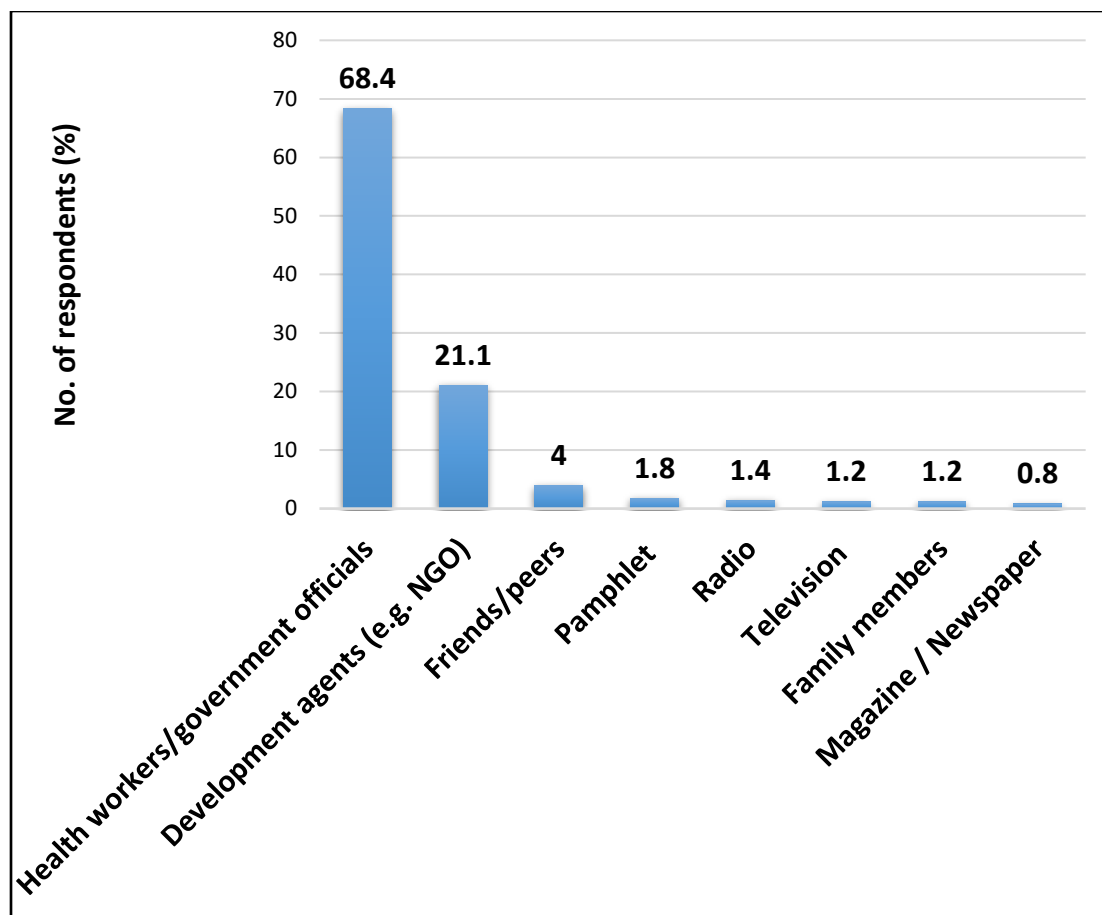
Moreover, the study should explore whether the reported awareness translates into consistent and equitable access to reproductive health services. Even with high awareness, barriers such as geographical distance, socio-cultural factors, or economic constraints could hinder women from effectively utilizing these services. Therefore, addressing potential disparities in service utilization,

particularly among subgroups within the surveyed population, becomes an important consideration. In conclusion, while the findings highlight positive awareness levels regarding reproductive health services, a comprehensive analysis incorporating qualitative aspects and a consideration of potential utilization barriers will provide a more nuanced understanding. This nuanced understanding is crucial for informing targeted interventions aimed at improving access, utilization, and overall reproductive health outcomes among women of reproductive age in the studied regions.

#### *4.6.1.2 Main Source of Information on Reproductive Health Services*

Figure 4.8 shows that the majority of the respondents (68.4%) get information about RHS from the health workers/government officials with 21.1% of respondents saying they got information from development agents such as NGOs. The primary sources of information about reproductive health services are essential for understanding where women of reproductive age acquire knowledge about available services. The source of information can significantly impact utilization. For instance, when respondents receive information from health workers or government officials, they may have more confidence and trust in utilizing these services.

The findings regarding the main sources of information on reproductive health services emphasize the importance of health workers, government officials, and development agents like NGOs in providing information. This information plays a pivotal role in influencing the utilization of reproductive health services. The study may explore the specific ways in which these information sources impact utilization and how sociocultural factors influence the choice of information sources among different demographic groups.



**Figure 4. 8:** Main source of information on reproductive health services  
*Source: Research Data (2023)*

The finding that the majority of respondents (68.4%) acquire information about RHS from health workers and government officials, with an additional 21.1% obtaining information from development agents such as NGOs, carries significant implications for the main objective of the study. The dominance of health workers and government officials as the primary sources of information indicates the pivotal role of the healthcare system and public health infrastructure in disseminating knowledge about RHS. This suggests a strong link between the awareness and knowledge levels reported in the previous findings and the influence of formal healthcare channels in imparting information to women of reproductive age. The implication is that public health

campaigns, health education programs, and communication strategies within the healthcare system have been effective in reaching and informing the target population.

The substantial reliance on health workers and government officials as information sources emphasizes the critical position of these stakeholders in shaping perceptions, attitudes, and behaviors related to reproductive health. It suggests that women in the surveyed regions trust and value information provided by healthcare professionals and government sources. This trust is crucial for establishing credibility and encouraging individuals to seek RHS based on the information received. However, the study should explore the quality, comprehensiveness, and clarity of information provided by health workers and government officials. Assessing the effectiveness of communication strategies in delivering accurate and understandable reproductive health information is essential. Additionally, understanding the role of development agents, such as NGOs, in supplementing information dissemination is crucial. NGOs often play a vital role in community-based health interventions, and their contribution to raising awareness should be recognized and further investigated.

The finding also highlights potential areas for intervention and improvement. If health workers and government officials are the primary conduits for reproductive health information, ensuring that they are adequately trained, updated on the latest guidelines, and equipped with effective communication skills becomes imperative. Strengthening the capacity of these key stakeholders can enhance the quality and impact of information dissemination, ultimately contributing to improved reproductive health outcomes. Moreover, while the study identifies major sources of information, it is essential to explore whether there are underserved or marginalized groups that may not have equal access to these sources. Addressing potential disparities in information access

among different demographic groups can contribute to more inclusive and equitable reproductive health interventions.

In summary, the study's finding on the main sources of information underlines the central role of health workers and government officials in shaping awareness about reproductive health services. To enhance the effectiveness of reproductive health programs, it is crucial to assess and optimize the quality of information provided, recognize the contribution of development agents, and ensure that information reaches all segments of the population.

#### *4.6.1.3 Socio-Cultural Factors Associated with Reproductive Health Services Utilization*

Based on the provided research findings in Table 4.2, the relationship between sociodemographic factors (state, age, marital status, place of residence, employment status, religion, and education status), and use of reproductive health services shows some statistically significant results.

Bivariable and multivariable logistic regression was conducted to establish the relationship between the age of the respondent and the uptake/utilization of RHS. The p-value of 0.049 suggests a statistically significant relationship between the age of the respondent and the uptake/utilization of reproductive health services. The odds ratio of 0.571 indicates that for each unit increase in the respondent's age, the odds of uptake and utilization of reproductive health services decrease by a factor of 0.571. This suggests a negative association between age and the likelihood of utilizing reproductive health services. The confidence interval, with a lower limit of 0.327 and an upper limit of 0.997, suggests that we can be 95% confident that the true odds ratio falls within this range. The interval includes the value 1, which means that the relationship is not as strongly supported by the data, but it still suggests a tendency for lower utilization as age increases.

**Table 4. 2:** Sociodemographic factors associated with reproductive health services utilization

<b>Variables</b>	<b>User of RH services</b> n (%) n = 290	<b>Non-user of RH services</b> n (%) n = 110	<b>OR (95% CI)</b>	<b>P Value</b>
<b>State</b>				
Central Equatoria	173 (59.7)	59 (53.6)	1	0.482
Western Equatoria	117 (40.3)	51 (46.4)	1.197 (0.725-1.976)	
<b>Age</b>				
Younger than 30 years	132 (45.5)	54 (49.1)	1	0.049*
30 years and older	158 (54.5)	56 (50.9)	0.571 (0.327-0.997)	
<b>Marital status</b>				
Married	186 (75.3)	82 (79.6)	1	0.657
Single	61 (24.7)	21(20.4)	0.858 (0.437-1.685)	
<b>Place of residence</b>				
Urban	60 (20.7)	14 (12.7)	1	0.046*
Rural	230 (79.3)	96 (87.3)	2.000 (1.012-3.950)	
<b>Employment status</b>				
Not employed	176 (60.7)	84 (76.4)	1	0.107
Employed	114 (30,3)	26 (23.6)	0.631 (0.360-1.104)	
<b>Religion</b>				
Christian	245 (84.5)	103 (93.6)	1	0.311
Traditional	45 (15.5)	7 (6.4)	0.617 (0.242-1.572)	
<b>Education status</b>				
No school/non-formal/dropped-out	138 (47.6)	89 (80.9)	1	0.000**
Completed secondary	152 (52.4)	21(19.1)	0.223 (0.122-0.406)	

**Source:** Research Data (2023)

\*\**. Correlation is significant at the 0.01 level*

\**. Correlation is significant at the 0.05 level*

Relationship between the place of residence (urban or rural) and uptake/utilization of reproductive health services: the p-value of 0.046 suggests a statistically significant relationship between the place of residence and the uptake/utilization of reproductive health services. The odds ratio of 2.000 indicates that individuals residing in urban areas have twice the odds of uptake and utilization of reproductive health services compared to individuals in rural areas. The confidence interval, with a lower limit of 1.012 and an upper limit of 3.950, suggests that we can be 95%

confident that the true odds ratio falls within this range. The interval does not include the value 1, supporting the significance of the relationship.

Relationship between the education status and uptake/utilization of reproductive health service: the p-value of 0.000 indicates a highly significant relationship between the education status and the uptake/utilization of reproductive health services. The odds ratio of 0.223 suggests that individuals with higher education levels have 0.223 times lower odds of uptake and utilization of reproductive health services compared to individuals with lower education levels. This indicates a negative association between education status and the likelihood of utilizing reproductive health services. The confidence interval, with a lower limit of 0.223 and an upper limit of 0.406, indicates that we can be 95% confident that the true odds ratio falls within this range. The interval does not include the value 1, further supporting the significance of the relationship.

In summary, the research findings regarding socio-cultural factors influencing the uptake and utilization of reproductive health services indicate the following: older age is associated with a decreased likelihood of utilizing reproductive health services; individuals residing in urban areas have higher odds of utilizing reproductive health services compared to those in rural areas; and higher education levels are associated with lower odds of utilizing reproductive health services. These findings suggest that addressing socio-cultural factors such as age, place of residence, and education status is crucial in promoting and improving the uptake and utilization of reproductive health services in the context of South Sudan.

## 4.6.2 Qualitative Analysis for Socio-Cultural Factors and Utilization of Reproductive Health Services

### 4.6.2.1 Multifaceted Nature of Barriers Shaped by Socio-Cultural Dynamics

The thematic analysis emphasizes the complex interplay of socio-cultural factors in influencing the uptake and utilization of RHS among women in South Sudan. Factors such as sex, age, marital status, residence, wealth index, religion, ethnic group, and education level play a significant role in determining whether women of reproductive age access and utilize RHS. Cultural practices, religious norms, and early marriage are identified as specific socio-cultural factors that impact the use of RHS in public health hospitals. Additionally, the level of education and knowledge about RHS also influence utilization.

*“Socio-cultural factors, such as sex, age, marital status, residence, wealth index, religion, ethnic group, and education level, shape the decision-making process and access to RHS. Thus, to address these barriers, it is crucial to adopt a culturally sensitive approach that takes into account the diverse backgrounds and beliefs of the target population. This involves promoting gender equality, empowering women through education, and engaging with religious and community leaders to foster supportive environments for RHS utilization.” (FGD-NGO, 2023)*

The qualitative finding highlighting the complex interplay of socio-cultural factors in influencing the uptake and utilization of RHS among women in South Sudan has substantial implications for the main objective of the study. The thematic analysis underscores the multifaceted nature of barriers shaped by socio-cultural dynamics, including sex, age, marital status, residence, wealth

index, religion, ethnic group, and education level. The recognition of these diverse socio-cultural factors emphasizes the need for a nuanced and context-specific approach in designing and implementing reproductive health interventions. A one-size-fits-all strategy may overlook the unique challenges faced by different demographic groups, hindering the effectiveness of reproductive health programs. Tailoring interventions to address the specific socio-cultural contexts and barriers identified, such as early marriage or religious norms, is essential for enhancing the accessibility and utilization of reproductive health services.

The identification of cultural practices, religious norms, and early marriage as factors influencing the use of RHS highlights the importance of engaging with local communities and religious leaders. Collaborative efforts with community influencers can help dispel misconceptions, overcome resistance to certain services, and foster a supportive environment for reproductive health. Acknowledging and respecting cultural diversity while promoting gender equality and women's empowerment become key components of an effective intervention strategy. Furthermore, the influence of education on RHS utilization suggests that efforts to enhance reproductive health outcomes should include educational initiatives. Promoting awareness and knowledge about reproductive health services, family planning, and maternal care can empower women to make informed decisions about their reproductive well-being. This involves not only improving access to education but also ensuring that educational programs incorporate comprehensive reproductive health education.

The quote from the focus group discussion with an NGO participant underscores the importance of a culturally sensitive approach. It emphasizes the role of gender equality promotion, women's empowerment through education, and collaboration with religious and community leaders to

create an enabling environment for RHS utilization. This aligns with the broader objective of fostering a holistic and inclusive reproductive health ecosystem that accommodates the socio-cultural diversity of the population.

The qualitative analysis underscores the intricate web of socio-cultural factors that influence the utilization of RHS among women in South Sudan. These factors encompass a broad-spectrum including sex, age, marital status, residence, wealth index, religion, ethnic group, and education level. Each of these elements plays a critical role in shaping women's decision-making processes regarding their reproductive health. Cultural practices, deeply embedded religious norms, and prevalent issues like early marriage emerge as significant barriers affecting access to RHS services in public health settings.

Sexual and reproductive health in South Sudan is deeply intertwined with cultural norms and practices that dictate social roles and expectations. Women often face constraints due to societal attitudes that restrict their autonomy in healthcare decisions. The patriarchal structure prevalent in many communities limits women's agency in accessing and utilizing RHS, reflecting broader gender inequalities (Sumankuuro et al., 2018). Moreover, early marriage practices further exacerbate these challenges, leading to higher rates of adolescent pregnancies and reduced access to comprehensive reproductive health education and services.

The level of education and knowledge about RHS emerges as pivotal factors influencing utilization rates. Women with higher educational attainment are more likely to access and utilize RHS, highlighting the empowering role of education in reproductive health decision-making. Conversely, lower education levels often correlate with limited awareness of available services, perpetuating barriers to effective healthcare utilization (Mochache et al., 2020).

Addressing these multifaceted barriers requires a culturally sensitive approach that acknowledges and respects the diverse backgrounds and beliefs of the target population. Efforts should prioritize promoting gender equality and empowering women through educational initiatives that enhance awareness and knowledge about reproductive health. Engaging with religious and community leaders is essential to foster supportive environments that endorse and facilitate RHS utilization. These leaders can play a pivotal role in challenging harmful cultural practices and advocating for policies that promote equitable access to reproductive health services.

In conclusion, understanding the complex interplay of socio-cultural dynamics is crucial for developing effective strategies to improve RHS utilization in South Sudan. By addressing these barriers through inclusive and culturally sensitive approaches, stakeholders can contribute to enhancing reproductive health outcomes and empowering women to make informed decisions about their health and well-being.

#### *4.6.2.2 Differences in Perception and Knowledge About Reproductive Health Methods*

Another theme revolves around the differences in perception and knowledge about reproductive health methods among married couples. This suggests that the utilization of RHS can be influenced by the dynamics within marital relationships. It implies that decision-making processes related to reproductive health, including family planning, may be shaped by the beliefs and understanding of both partners. Bridging the knowledge gap and promoting shared decision-making within marital relationships can contribute to improved utilization of reproductive health services.

In addition, inadequate knowledge among women visiting public health facilities was another theme that emerged from the thematic analysis. This suggests a need for improved health education

and awareness programs to ensure that women have accurate and comprehensive knowledge about available RHS, including family planning methods, prevention of STIs/HIV, and post-natal care. Enhancing women's knowledge can empower them to make informed decisions regarding their reproductive health and increase their utilization of services.

*“Inadequate knowledge among women visiting public health facilities regarding RHS calls for improved health education and awareness programs. These initiatives should focus on providing accurate and comprehensive information about available services, their benefits, and addressing any misconceptions or myths surrounding reproductive health. Equipping women with the knowledge they need to make informed choices can positively impact service utilization.” (KI-CO, 2023)*

The qualitative finding highlighting differences in perception and knowledge about reproductive health methods among married couples introduces a crucial dimension to the main objective of the study. The thematic analysis underscores the intricate dynamics within marital relationships that may influence the utilization of RHS. The perception and knowledge gap identified among married couples suggest that decision-making processes related to reproductive health, particularly family planning, are shaped by the beliefs and understanding of both partners.

This finding underscores the importance of considering not only individual knowledge but also the shared dynamics within marital relationships when designing reproductive health interventions. It implies that interventions aiming to enhance the uptake of RHS should incorporate strategies that promote open communication, shared decision-making, and joint awareness-building within couples. Bridging the knowledge gap and fostering a mutual understanding of

reproductive health methods could lead to more informed choices and increased utilization of services among married couples.

Moreover, the thematic analysis revealing inadequate knowledge among women visiting public health facilities highlights a broader issue that needs attention. The identification of this theme emphasizes the critical role of health education and awareness programs in addressing knowledge gaps among women. To achieve the main objective of the study – improving the utilization of reproductive health services – it is imperative to prioritize initiatives that provide accurate, comprehensive, and culturally sensitive information about available services. This includes family planning methods, prevention of STIs/HIV, and post-natal care.

The quote from the key informant involved in community outreach underscores the need for targeted health education programs. Such initiatives should not only focus on disseminating information but also address any misconceptions or myths surrounding reproductive health. Equipping women with the knowledge they need to make informed choices is crucial for empowering them to take an active role in managing their reproductive health. Improved knowledge can positively influence attitudes toward reproductive health services, contributing to increased utilization.

Based on the qualitative analysis conducted on RHS utilization among married couples, several key themes emerge that shed light on the factors influencing decision-making and knowledge gaps within marital relationships. One prominent theme is the variation in perception and knowledge about reproductive health methods among couples. This highlights how the utilization of RHS is intricately linked to the dynamics within marriages, where decisions regarding family planning and other reproductive health choices are often shaped by the beliefs and understanding of both

partners. Addressing these differences through interventions that promote shared decision-making could potentially enhance the uptake of reproductive health services.

Another critical finding underscores the inadequate knowledge among women accessing public health facilities. This points to a significant gap in health education and awareness programs aimed at providing comprehensive and accurate information about RHS. Many women lack sufficient understanding of available services, including family planning methods, prevention of STIs and HIV, and post-natal care. Improving women's knowledge through targeted educational initiatives is crucial for empowering them to make informed decisions about their reproductive health. By addressing misconceptions and enhancing awareness, these programs can potentially increase the utilization of reproductive health services among women in public health settings.

The qualitative synthesis emphasizes the importance of tailored interventions that consider the contextual factors influencing reproductive health decision-making within marital relationships. Strategies should aim not only to bridge knowledge gaps but also to foster mutual understanding and communication between partners regarding reproductive health choices. This approach is essential for promoting equitable access to RHS and empowering individuals, particularly women, to take control of their reproductive health outcomes.

Moreover, the findings call for a multi-faceted approach to health education that goes beyond merely disseminating information. It should also involve community engagement, culturally sensitive communication strategies, and efforts to address socio-cultural norms that may affect reproductive health decision-making. By integrating these insights into policy and programmatic interventions, stakeholders can work towards improving the overall utilization of reproductive health services and promoting better health outcomes for individuals and families.

In summary, the qualitative analysis underscores the complex interplay of knowledge, perceptions, and socio-cultural dynamics influencing RHS utilization among married couples and women accessing public health facilities. Addressing these factors through targeted interventions and comprehensive health education programs is essential for promoting informed decision-making and enhancing reproductive health outcomes in diverse communities.

#### *4.6.2.3 The Impact of Cultural Practices*

Another theme highlights the impact of cultural practices, such as polygamy and early marriage, on the use of family planning. These practices can limit women's autonomy and decision-making power regarding their reproductive health, affecting their access to and utilization of reproductive health services. Addressing cultural norms and practices that restrict women's agency and promoting gender equality can help overcome these barriers. The findings also underscore the importance of addressing cultural practices, such as polygamy and early marriage, that can limit women's ability to access family planning and other RHS.

*'Promoting reproductive health education, encouraging open dialogue within communities, and challenging harmful cultural norms can help shift perceptions and empower women to make informed decisions about their reproductive health.'* (KI-CO, 2023)

The qualitative finding highlighting the impact of cultural practices, specifically polygamy and early marriage, introduces a critical aspect to the main objective of the study. The thematic analysis reveals that these cultural practices can significantly limit women's autonomy and decision-making power concerning their reproductive health, consequently affecting their access to and utilization

of RHS. This underscores the importance of addressing deeply ingrained cultural norms that hinder women's agency in matters related to reproductive health.

The identified theme implies that interventions aimed at improving the utilization of RHS should go beyond merely providing services; they must also address the cultural determinants that impact women's ability to access and make choices about reproductive health. Cultural practices, such as polygamy and early marriage, present substantial barriers that require targeted and culturally sensitive strategies to overcome. These interventions should involve comprehensive reproductive health education programs that challenge harmful cultural norms, promote gender equality, and encourage open dialogue within communities.

To achieve the main objective of the study, it is crucial to recognize the interconnectedness of cultural factors with reproductive health outcomes. Polygamy and early marriage are deeply rooted in societal structures, and efforts to shift perceptions and empower women must involve collaboration with community leaders, religious figures, and other influential stakeholders. This requires a multifaceted approach that not only provides information about family planning and reproductive health but also addresses the underlying cultural beliefs and practices that hinder women's autonomy.

The qualitative findings suggest that fostering a supportive environment for reproductive health requires engaging with the community at various levels. Initiatives should aim to challenge norms that restrict women's agency, providing spaces for open dialogue and education that facilitate a shift in perceptions. Promoting gender equality becomes a central component in dismantling cultural barriers, ensuring that women have the autonomy to make informed decisions about their reproductive health.

The qualitative analysis examining the impact of cultural practices on the utilization of reproductive health services (RHS) reveals significant barriers rooted in traditions such as polygamy and early marriage. These cultural norms often curtail women's autonomy and decision-making power concerning their reproductive health. In contexts where polygamy is practiced, for instance, women may face challenges in accessing family planning services or making choices about contraception due to societal expectations and power dynamics within marital relationships. Similarly, early marriage can limit girls' education and economic opportunities, impacting their ability to make informed decisions about their reproductive health.

The findings underscore the need for interventions that address these cultural barriers effectively. Promoting reproductive health education is crucial in challenging harmful cultural norms and fostering open dialogue within communities. By increasing awareness about the importance of reproductive health and rights, these initiatives can empower women to assert their agency and make informed decisions regarding contraception, maternal health, and family planning. Moreover, engaging with community leaders and influencers can help shift perceptions and advocate for gender equality, thereby creating an environment supportive of women's reproductive health choices.

Furthermore, the qualitative synthesis highlights the intertwined nature of cultural practices with broader socio-economic factors. Poverty, lack of education, and limited access to healthcare services exacerbate the challenges faced by women in practicing reproductive health autonomy. Addressing these underlying factors requires comprehensive approaches that combine health education with efforts to improve economic opportunities and social support systems for women.

Such integrated strategies are essential for breaking down systemic barriers and promoting equitable access to reproductive health services across diverse cultural contexts.

In conclusion, the qualitative analysis underscores that cultural practices such as polygamy and early marriage significantly impact women's access to and utilization of reproductive health services. Effective strategies must not only address these cultural barriers but also empower women through education, advocacy for gender equality, and community engagement. By promoting a supportive environment that respects women's reproductive rights and choices, stakeholders can work towards improving overall reproductive health outcomes and advancing gender equality in societies where these practices persist.

#### *4.6.2.4 Availability of Reproductive Health Services*

Yet another theme that emerged was the availability of RHS, highlighting the types of RHS available in public health facilities, including family planning, post-natal care and counselling, health education on the prevention of STIs/HIV, and the use of specific contraceptives such as IUDs and progestogen-only pill (POP). However, there is a gap in the availability of certain reproductive health services that women desire, such as female condoms, and additional contraceptive options like POP, and IUDs. Ensuring a comprehensive range of reproductive health services in public health facilities is essential to meet the diverse needs and preferences of women.

*“To ensure a comprehensive range of RHS in the public health facilities, it is essential to address the gaps in availability identified in the study. This includes expanding the range of contraceptive options, such as providing female condoms, POP, and IUDs, based on the preferences and needs of women. “(FGD-Partner, 2023)*

Strengthening the supply chain management and training health workers to provide accurate information and counseling on these services is critical. Overall, the thematic analysis highlights the significance of considering socio-cultural factors, promoting gender equality, addressing harmful cultural practices, improving reproductive health education, and expanding the availability of comprehensive services to enhance the uptake and utilization of RHS among women in South Sudan.

The qualitative finding on the availability of RHS introduces a crucial dimension to the main objective of the study. The thematic analysis reveals a comprehensive range of RHS available in public health facilities, encompassing family planning, post-natal care, counseling, health education on STI/HIV prevention, and specific contraceptives like IUDs and progestogen-only pills (POP). However, the finding also sheds light on existing gaps in the availability of certain reproductive health services that women desire, such as female condoms, additional contraceptive options like POP, and IUDs.

The identified theme implies that addressing the gaps in the availability of reproductive health services is essential to achieving the main objective of the study, which is to enhance the utilization of RHS. It underscores the importance of ensuring that public health facilities offer a comprehensive range of services that align with the diverse needs and preferences of women. By acknowledging and addressing these gaps, the study aims to contribute to the creation of an environment where women have access to a full spectrum of reproductive health options.

The qualitative finding suggests that efforts to improve the utilization of RHS should not only focus on increasing overall access but also on diversifying the available services. This involves expanding the range of contraceptive options, including those specifically mentioned by women

as desired but currently lacking in availability. The implication is that interventions should be tailored to bridge these service gaps, ensuring that women can access the reproductive health services that align with their preferences and reproductive goals.

To achieve the main objective of enhancing RHS utilization, the qualitative finding underscores the importance of policy and programmatic interventions aimed at strengthening the capacity of public health facilities. This includes equipping these facilities with the necessary resources, training healthcare providers, and ensuring a consistent and reliable supply of a diverse range of reproductive health services. Moreover, engaging with communities to understand their specific needs and preferences is crucial for designing and implementing effective interventions that address the identified gaps.

The qualitative analysis of the availability of RHS in public health facilities underscores both progress and persistent gaps in meeting women's diverse reproductive health needs. The study identifies several essential RHS currently available, including family planning services, post-natal care, counselling on STIs/HIV prevention, and specific contraceptive methods like intrauterine devices (IUDs) and the progestogen-only pill (POP). These services represent critical components of reproductive health care that contribute to maternal health and family planning efforts.

However, the analysis also reveals significant gaps in service provision that affect women's access and choice. Notably, there is a lack of availability for certain contraceptive options desired by women, such as female condoms, POP, and additional types of IUDs. These gaps highlight a discrepancy between the services offered and the preferences and needs expressed by women accessing public health facilities. Addressing these gaps is crucial for ensuring comprehensive reproductive health care that respects individual choices and promotes health equity.

The findings suggest several strategies to improve the availability of RHS in public health settings. One key recommendation is to expand the range of contraceptive options available, ensuring that facilities offer a variety of methods that cater to different preferences and medical considerations. This could involve training healthcare providers on the administration and counseling of less commonly available contraceptives, thereby enhancing the capacity of facilities to meet diverse client needs.

Additionally, the qualitative synthesis emphasizes the importance of responsive health systems that prioritize women's reproductive health choices. This includes advocacy for policy changes that support the inclusion of additional contraceptive options in national reproductive health programs and budgets. By integrating women's perspectives and preferences into service planning and delivery, health systems can better address the gaps identified in the study and improve overall service utilization and client satisfaction.

In conclusion, while there have been strides in making essential RHS available in public health facilities, there remains a critical need to bridge gaps in service provision, particularly concerning contraceptive options. Ensuring a comprehensive range of RHS not only enhances women's reproductive autonomy but also contributes to broader public health goals, including reducing maternal mortality and promoting healthy families. Addressing these challenges requires collaborative efforts between policymakers, healthcare providers, and communities to create supportive environments that prioritize women's reproductive health rights and choices.

### 4.6.3 Discussion of the Findings

The findings reveal a broad awareness among respondents about various RHS offered in public health facilities. The services most commonly known include HIV counselling and testing (13.4%), family planning (13.1%), prevention and management of STIs (13.1%), and modern contraceptive services (13.1%). Awareness about condom use was also significant (12.1%), followed by PMTCT (11.4%), maternal and newborn care (8.3%), prevention and management of gender-based violence (7.9%), prevention of unsafe abortion and management of post-abortion care (6.1%), and routine gynaecological examination (1.4%). These findings align with the literature, which suggests that knowledge about RHS is generally high in sub-Saharan Africa, although gaps persist, particularly concerning specific services like routine gynaecological exams (Binu et al., 2018; Helamo et al., 2017). The broad awareness is a positive indicator of the potential for RHS utilization, yet the lower awareness for critical services like routine gynecological examinations highlights areas needing more focused public health education efforts.

The study indicates that the primary source of information about RHS for most respondents is health workers and government officials (68.4%), followed by development agents such as NGOs (21.1%). Other sources like friends/peers (4.0%), pamphlets (1.8%), radio (1.4%), television (1.2%), family members (1.2%), and magazines/newspapers (0.8%) are less influential. This finding contrasts with other studies, where mass media plays a significant role in disseminating health information (Ninsiima et al., 2021). The reliance on health workers and NGOs underscores the importance of direct, interpersonal communication in RHS education in South Sudan, possibly due to limited access to mass media in rural areas.

These findings can be contextualized within the HBM, which posits that perceived susceptibility, severity, benefits, barriers, and cues to action influence health behaviour (Green et al., 2020). The high awareness of specific RHS indicates that the perceived benefits of these services are well-communicated. However, the low awareness of routine gynaecological examinations suggests perceived barriers or a lack of cues to action in this area. Additionally, the significant role of health workers and NGOs as primary information sources aligns with the HBM's emphasis on cues to action. These interpersonal interactions can effectively trigger health behaviour changes by addressing perceived barriers directly and providing personalized information (Rural Health Information Hub, 2022).

The broad awareness of key RHS components such as HIV counselling and testing, and family planning, indicates successful public health campaigns and the effectiveness of health worker interventions. However, the relatively low awareness of routine gynaecological examinations suggests a gap in comprehensive reproductive health education. This gap could lead to underutilization of essential preventive services, potentially increasing the risk of untreated reproductive health issues. Thus, public health strategies should focus on increasing awareness and perceived importance of lesser-known services, using targeted education campaigns and leveraging the trusted role of health workers. In addition, enhancing the reach of RHS information through diverse channels, including radio and community-based outreach programs, could improve overall awareness and utilization. Integrating mass media campaigns with health worker-led initiatives could ensure wider dissemination of RHS information.

The study investigated several sociodemographic factors to understand their association with the utilization of RHS in South Sudanese public health facilities. Women aged 30 years and older were

less likely to utilize RHS compared to younger women (OR = 0.571,  $p = 0.049$ ). Women residing in rural areas were more likely to utilize RHS compared to those in urban areas (OR = 2.000,  $p = 0.046$ ). Women with completed secondary education were significantly more likely to utilize RHS compared to those with no formal education, non-formal education, or who had dropped out (OR = 0.223,  $p < 0.001$ ).

These findings align with existing literature on reproductive health services utilization in low-resource settings, emphasizing the impact of education, age, and rural-urban disparities. Higher education levels have consistently been associated with increased health service utilization due to improved health literacy and empowerment (WHO, 2020). The lower utilization among older women might reflect generational differences in health-seeking behaviour and access to information (UNFPA, 2018). Rural residents often present barriers such as limited healthcare infrastructure and transportation challenges, which can hinder access to RHS (Barros et al., 2021).

Contrasting findings include the lack of significant associations with marital status and employment status, which may differ from studies in other contexts where marital status and financial independence play significant roles in healthcare decision-making (Koblinsky et al., 2017). The absence of religious differences in RHS utilization contrasts with studies highlighting religious beliefs as influencing healthcare choices in other regions (Chandra-Mouli et al., 2014).

The findings underscore the need for targeted interventions to address barriers identified, such as improving educational opportunities for women, especially in rural areas, and enhancing health infrastructure to reduce disparities. The HBM provides a theoretical framework to interpret these findings, emphasizing the importance of perceived benefits and barriers in shaping health-seeking behaviours (Rosenstock et al., 1988). Perceived susceptibility to health risks and cues to action can

also influence RHS utilization, suggesting avenues for targeted health education and community outreach programs.

Limitations of the study include its cross-sectional design, which limits causal inference, and potential biases in self-reported data. Future research could employ longitudinal designs to establish causal relationships between sociodemographic factors and RHS utilization. Qualitative studies could provide deeper insights into cultural and social factors influencing health-seeking behaviours among different demographic groups (Smith et al., 2019). Furthermore, investigating intersectional factors such as ethnicity and socioeconomic status could offer more nuanced insights into disparities in RHS utilization. Policy interventions should focus on improving access to reproductive health services through community-based programs, reducing financial barriers, and enhancing cultural competency among healthcare providers (Gupta et al., 2016).

In conclusion, the study's quantitative findings highlight significant associations between sociodemographic factors and RHS utilization among women in South Sudan. These insights contribute to understanding the complex interplay of demographic characteristics in healthcare access and utilization. Addressing these factors through targeted interventions and policy measures is crucial for improving reproductive health outcomes in similar resource-constrained settings.

The study highlights the complex interplay of socio-cultural factors influencing the utilization of RHS among women in South Sudan. Factors such as sex, age, marital status, residence, wealth index, religion, ethnic group, and education level significantly shape decision-making processes regarding RHS access. These findings resonate with existing literature emphasizing how cultural norms and socio-economic status impact healthcare utilization in resource-constrained settings (Geary et al., 2014; Sumankuuro et al., 2018).

Comparatively, socio-economic factors such as education and income have been consistently linked to better reproductive health outcomes globally (Ayehu et al., 2016; WHO, 2020). In South Sudan, where educational attainment and economic disparities are pronounced, these factors intersect with cultural norms to influence access to and utilization of RHS. For instance, women with lower education levels may have limited knowledge about available services and face greater barriers due to entrenched gender norms that prioritize male decision-making in health matters (Kane et al., 2016). Unexpectedly, the study revealed that despite efforts to address these barriers through community education and awareness programs, socio-cultural factors remain formidable obstacles. This suggests a need for more targeted interventions that not only educate but also challenge harmful cultural practices and empower women within their socio-cultural contexts.

Inadequate knowledge emerged as a significant barrier to RHS utilization among women in South Sudan. The study underscores those misconceptions and myths surrounding contraceptives and other RHS that contribute to low uptake rates. This finding aligns with global trends where accurate knowledge about contraception correlates with higher utilization rates (Binu et al., 2018; Helamo et al., 2017). Contrarily, the study found pockets of well-informed individuals who actively sought out RHS based on accurate knowledge. This discrepancy highlights the uneven distribution of information and the need for targeted educational campaigns that address local beliefs and dispel myths effectively. The findings suggest that improving knowledge through community-based health education can lead to positive shifts in reproductive health behaviours, echoing similar interventions in neighbouring countries (Mochache et al., 2020; Kinaro et al., 2019).

Cultural practices, such as polygamy and early marriage, were identified as significant barriers to RHS utilization in South Sudan. These practices limit women's autonomy and decision-making

power regarding their reproductive health, perpetuating gender inequalities (KI-CO, 2023). Addressing these cultural norms is crucial for enhancing women's agency in health decisions and promoting gender equality, as noted in other Sub-Saharan African contexts (Sumankuuro et al., 2018; Mafuta et al., 2018). Interestingly, the study found that in some communities undergoing socio-political transitions, there was openness to questioning traditional norms and embracing modern reproductive health practices. This presents an opportunity for targeted interventions that leverage transitional periods to promote more equitable gender norms and reproductive health behaviours (Kane et al., 2016).

The study identified gaps in the availability of RHS in South Sudanese public health facilities, particularly concerning the range of contraceptive options offered. While essential services like family planning and post-natal care were generally available, less commonly used methods such as female condoms and specific types of contraceptives (POP, IUDs) were lacking (FGD-Partner, 2023). This gap underscores the importance of ensuring a comprehensive range of RHS to meet diverse needs and preferences, a critical factor in enhancing service utilization (WHO Africa, 2020). Comparatively, studies from other low-resource settings reveal similar challenges in service provision, often due to supply chain issues, funding constraints, and limited healthcare infrastructure (Atuyambe et al., 2015; Akinyi, 2014). Addressing these gaps requires not only increased resource allocation but also improvements in health system governance and community engagement to prioritize reproductive health needs.

In synthesizing these findings, it becomes evident that addressing socio-cultural barriers, improving knowledge dissemination, challenging harmful practices, and enhancing service availability are essential steps towards improving RHS utilization in South Sudan. These findings

align with existing literature on reproductive health in Sub-Saharan Africa, highlighting persistent challenges and opportunities for intervention. The study's limitations include its focus on selected public health facilities and the potential for social desirability bias in participant responses.

In conclusion, the study underscores the importance of addressing socio-cultural determinants, improving knowledge, and enhancing service availability to promote reproductive health equity in South Sudan. By contextualizing these findings within global reproductive health frameworks and theoretical perspectives like the Health Belief Model, policymakers and practitioners can develop targeted interventions that effectively address barriers and promote positive reproductive health behaviours among women in South Sudan and beyond.

#### **4.7 Health Facility Characteristics and Utilization of Reproductive Health Services**

Health facility characteristics refer to various attributes and features of the healthcare setting that can impact individuals' access to and utilization of reproductive health services. These characteristics will include the availability and accessibility of services, hospital classification (including PHCU, PHCC, and State or County Hospitals), modern contraceptives (including IUD, oral contraceptives, condoms, injectables, emergency contraceptive pills and spermicidal agents), and revenue resources and NGO affiliation. This section will present health facility characteristics that are likely to influence the uptake and utilization of RHS in the selected public health services.

## **4.7.1 Quantitative Analysis for Health Facility Characteristics and Utilization of Reproductive Health Services**

### ***4.7.1.1 Awareness of the Nearest Reproductive Health Clinic***

The finding that 57.8% of women were aware of the nearest RH clinic, while 42.3% were not, has several implications for the accessibility and effectiveness of reproductive health services in the region. Firstly, the fact that nearly 43% of women are unaware of the nearest RH clinic indicates a significant gap in public health information dissemination and accessibility. This lack of awareness can act as a barrier to the utilization of RH services, as women who do not know where to find these services are unlikely to seek them out. This finding underscores the need for improved communication strategies to inform women about the locations and services of RH clinics.

Secondly, the awareness gap may reflect broader issues of healthcare infrastructure and community outreach. It suggests that information about RH clinics is not being effectively communicated to all segments of the population, particularly those who might be more isolated or harder to reach, such as women in rural areas or those with lower levels of education. To address this, healthcare authorities could implement targeted outreach programs, such as community health workers or mobile health units, to ensure that information reaches all women in the community. Moreover, this finding has implications for the equity of healthcare access. If a significant portion of women are unaware of RH clinics, it suggests that there may be disparities in health education and service delivery that need to be addressed. Efforts should be made to understand and mitigate the barriers that prevent women from learning about and accessing RH services. This might include language barriers, cultural factors, or logistical challenges such as transportation.

From a policy and planning perspective, the finding highlights the importance of ongoing community engagement and education initiatives. Health authorities should prioritize creating and disseminating clear, accessible information about the availability and location of RH services. This could involve partnerships with local organizations, use of media campaigns, and community meetings to raise awareness. Additionally, improving signage and directions to RH clinics, as well as incorporating information about these services into regular community health education sessions, could help increase awareness. Ensuring that healthcare providers and community leaders are equipped with accurate information to share with women can also play a crucial role in bridging this awareness gap.

The awareness of the nearest reproductive health clinic is a crucial factor that can influence the utilization of reproductive health services. Women who are aware of the nearest clinic may be more likely to utilize these services when needed. Awareness of the nearest clinic is closely related to geographical accessibility. If women are aware of a clinic in close proximity, this may positively impact their utilization of reproductive health services due to the convenience of access.

The findings regarding awareness of the nearest reproductive health clinic emphasize the importance of geographical accessibility and awareness in influencing the utilization of reproductive health services. The study can further investigate the reasons behind the lack of awareness and explore sociocultural factors that may be associated with this lack of knowledge. Additionally, these findings can guide efforts to improve access and awareness of reproductive health clinics, which, in turn, can impact utilization.

The finding on the awareness of the nearest RH clinic among the study participants holds significant implications for the main objective of the study. According to Figure 4.14, a majority

of the women (57.8%) are aware of the nearest RH clinic, while a notable portion (42.3%) reported a lack of awareness regarding the nearest RH clinic. This awareness gap implies that a considerable proportion of women in the study area might face challenges in accessing reproductive health services due to insufficient knowledge about the location of the nearest clinic. Lack of awareness about the existence and proximity of RH clinics can act as a formidable barrier, hindering women from seeking and utilizing essential reproductive health services. The main objective of the study, which is to enhance the utilization of reproductive health services, is directly impacted by this awareness gap.

To address this implication, interventions aimed at improving awareness and knowledge about the location of RH clinics become crucial. Community outreach programs, public health campaigns, and targeted communication strategies should be implemented to inform women about the existence and services offered by the nearest RH clinics. Empowering women with this knowledge is fundamental to fostering a sense of agency and encouraging them to proactively seek RHS.

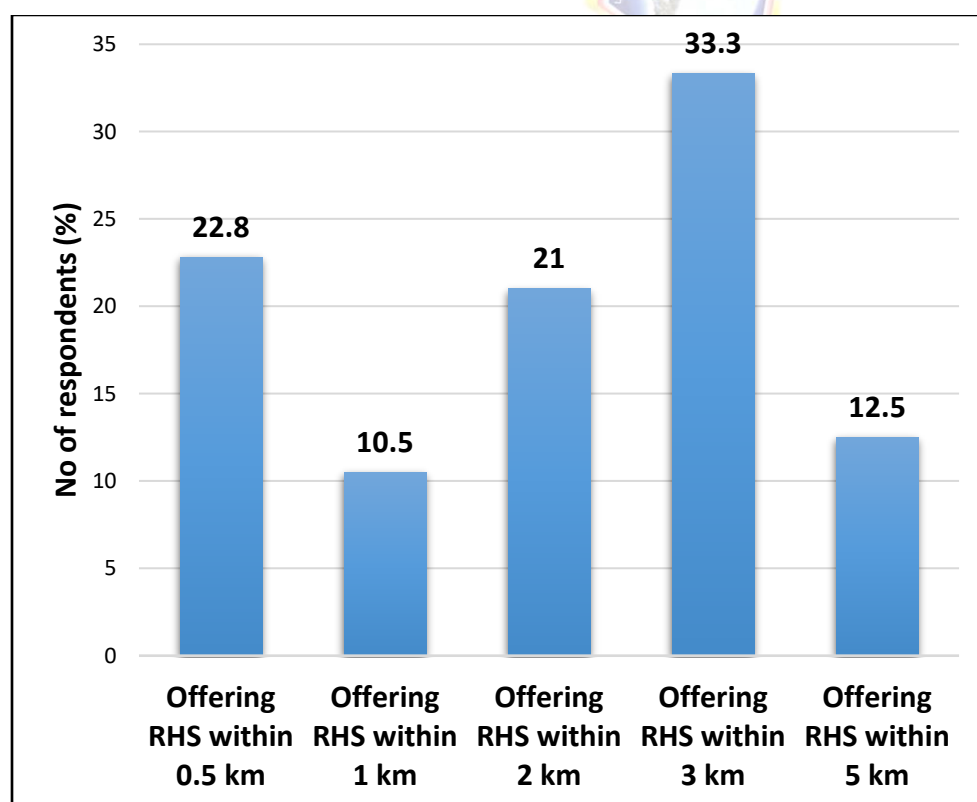
Moreover, the finding underscores the importance of considering geographic and informational accessibility as key determinants of reproductive health service utilization. Efforts to enhance awareness should be coupled with initiatives that make information easily accessible and comprehensible, especially for women residing in remote or underserved areas. This aligns with the overarching goal of the study, which is to identify and address barriers to reproductive health service utilization in South Sudan.

In conclusion, the awareness gap identified in the study serves as a critical focal point for interventions aiming to improve RHS utilization. By bridging this gap, the study seeks to

contribute to the empowerment of women, ensuring that they have the knowledge needed to make informed decisions about their RH and actively engage with available services.

#### 4.7.1.2 Distance to the Nearest Reproductive Health Clinic

Most of the women (33.3%, 133) reported that public health facilities offering RHS were within 3 km from their households with 22.8% of women reporting that public health facilities were offering RHS within 0.5 km (Figure 4.9). Women who lived within a 2 km radius distance from the nearest RHS clinic and their homes less than 30 minutes walking distance were classified as having high geographical accessibility and low otherwise. Thus, over 45.8% of the women reported living outside a 2 km radius distance from the nearest RHS clinic. The overall, mean distance to the nearest RHS centre from your household was 2.2 km.



**Figure 4. 9:** Health facilities offering reproductive health services within 0.5 to 5 km

**Source:** Research Data (2023)

Geographical accessibility plays a significant role in determining the level of utilization of reproductive health services. Women who have public health facilities offering RHS within close proximity (e.g., within 3 km or 0.5 km) of their households are more likely to utilize these services due to the convenience of access. The study can evaluate the distribution of public health facilities offering RHS. The percentage of women living outside the 2 km radius distance from the nearest clinic highlights areas where additional facilities may be needed.

The findings regarding geographical accessibility emphasize its significance in influencing the utilization of reproductive health services. The study can further investigate the reasons behind longer distances to the nearest clinics, whether these distances are influenced by sociocultural factors and the role of health facility locations in addressing these gaps in accessibility. Additionally, understanding the mean distance can help plan for transportation and infrastructure improvements in areas with lower accessibility.

The finding regarding the distance to the nearest RH clinic holds significant implications for the main objective of the study. According to Figure 4.9, a considerable proportion of women (45.8%) reported living outside a 2 km radius distance from the nearest RH service clinic. Additionally, only 22.8% mentioned having public health facilities offering RHS within 0.5 km, while 33.3% reported facilities within 3 km. This geographical accessibility gap suggests that a substantial portion of the study population faces challenges related to proximity when seeking reproductive health services. Distance to healthcare facilities is a crucial determinant of service utilization, and the study's main objective, aimed at enhancing the uptake of reproductive health services, is directly affected by this geographical barrier.

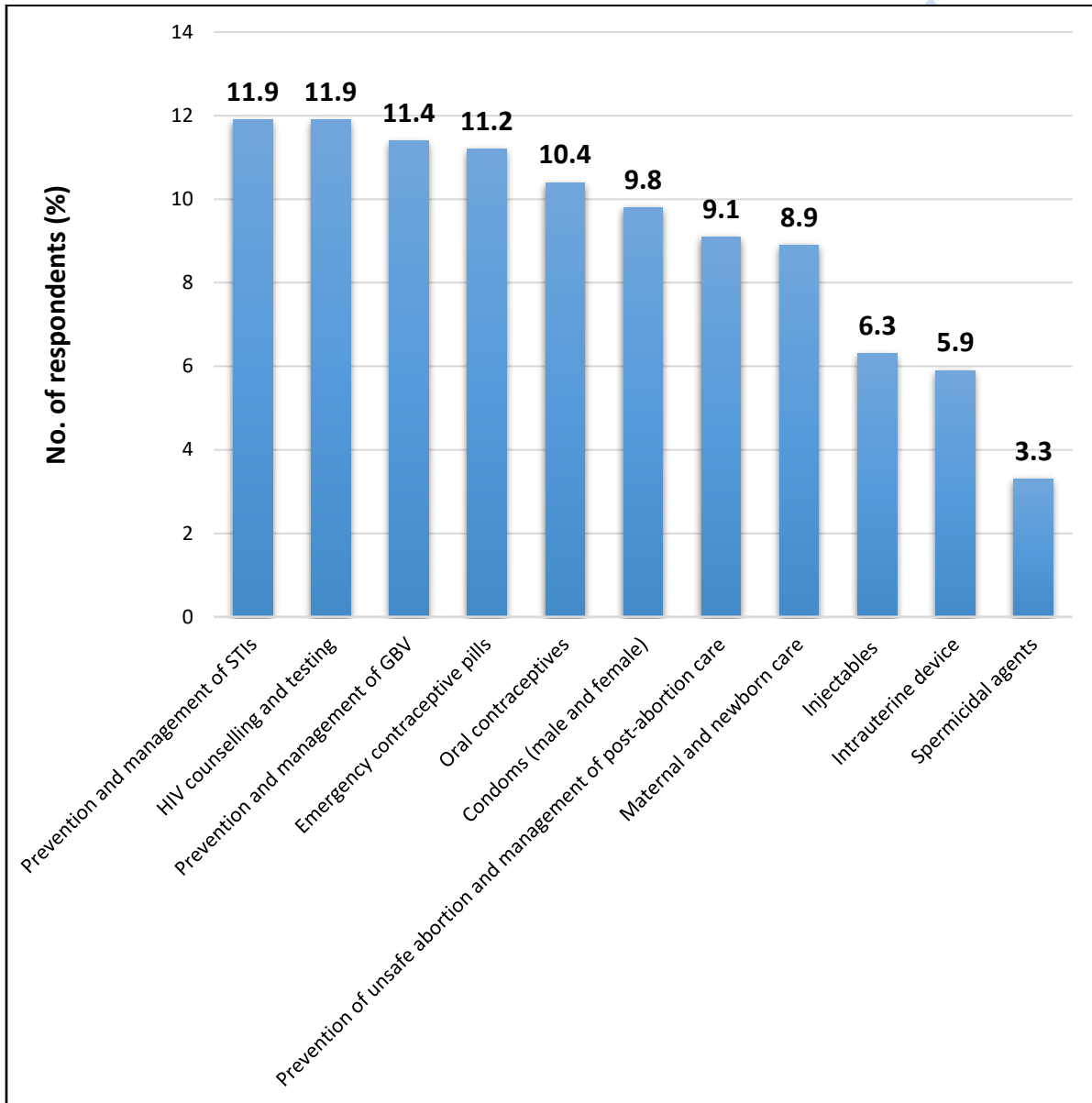
The implication emphasizes the need for strategic interventions to improve the spatial distribution of RH clinics or services. Enhancing accessibility through measures such as establishing additional facilities, mobile clinics, or outreach programs in areas with limited proximity to existing clinics becomes essential. Addressing this challenge aligns with the study's overarching goal of identifying and overcoming barriers to reproductive health service utilization in South Sudan. Furthermore, the classification of women based on high or low geographical accessibility provides a nuanced understanding of the impact of distance on service utilization. It highlights that nearly half of the women may face challenges related to the geographical distribution of RHS, potentially leading to delayed or limited access to essential RH care.

In conclusion, addressing the geographical accessibility gap identified in the study is crucial for achieving the main objective. By strategically planning and implementing interventions to reduce the distance barriers, the study aims to contribute to improving the overall utilization of reproductive health services in South Sudan. This involves a multi-faceted approach, including infrastructure development, outreach initiatives, and community engagement to ensure that RHS are not only available but also easily accessible to all women, irrespective of their geographical location.

#### *4.7.1.3 Services Provided in the Reproductive Health Clinics*

Figure 4.10 shows several services are provided in the RHS clinics across the selected public health facilities. The most common services included: prevention and management of STIs; HIV counselling and testing; prevention and management of GBV; emergency contraceptive pills; and oral contraceptives. The availability of a wide range of reproductive health services within the selected public health facilities indicates the potential for women to access a comprehensive set of

services. This can positively impact the level of utilization as women have access to various services that cater to their needs. The availability of a variety of services may require specific equipment, trained staff, and infrastructure within the health facilities. Understanding the range of services and their availability can help assess the capacity of these facilities to provide quality care.



**Figure 4. 10:** Services provided in the reproductive health clinics  
*Source: Research Data (2023)*

The findings regarding the services provided in the RHS clinics highlight the potential for women to access a comprehensive set of reproductive health services. This diversity of services can positively impact the level of utilization, as women have access to a broad range of care options. Additionally, the availability of services sensitive to sociocultural factors and GBV prevention can contribute to a more inclusive and effective RHS system. The findings depicted in Figure 4.10, illustrating the range of services provided in the RHS clinics across selected public health facilities, carry notable implications for the main objective of the study. The identified services, such as prevention and management of STIs, HIV counseling and testing, prevention and management of GBV, emergency contraceptive pills, and oral contraceptives, represent a diverse spectrum of reproductive health care.

The presence of these services suggests a foundational infrastructure for addressing various aspects of reproductive health within the public health facilities. It aligns with the main objective of the study, which likely focuses on understanding and enhancing the utilization of comprehensive reproductive health services. The availability of services like STI prevention, HIV testing, and emergency contraceptives reflects a commitment to addressing immediate and critical reproductive health needs.

However, the implication goes beyond the mere provision of services; it underscores the importance of ensuring that women are not only aware of these services but also effectively utilizing them. The study should delve into the factors influencing the uptake of these specific services, investigating potential barriers and facilitators. For example, it may explore whether there are awareness gaps regarding the availability of emergency contraceptive pills or if there are cultural or social factors affecting the utilization of services related to gender-based violence.

Moreover, the study may consider the overall comprehensiveness of the services provided. Are there additional services that women express a need for but are not currently offered? Understanding these gaps and aligning them with the preferences and needs of the target population is crucial for optimizing reproductive health service utilization. In conclusion, the identified services in Figure 4.10 provide a foundational understanding of the available reproductive health services. The study's main objective should now focus on exploring the dynamics surrounding the utilization of these services, identifying potential gaps, and proposing targeted interventions to enhance the overall uptake of comprehensive RH care in the selected public health facilities in South Sudan.

#### *4.7.1.4 Health Facility Characteristics Associated with Reproductive Health Services*

##### *Utilization*

Based on the provided research findings in Table 4.3, the relationship between health facility characteristics (RHS accessibility, hospital classification, and provision of modern contraceptives) and use of reproductive health services shows some statistically significant results.

Relationship between the provision of intrauterine devices and uptake/utilization of RHS: the p-value of 0.000 indicates a highly significant relationship between the provision of intrauterine devices and the uptake/utilization of reproductive health services. The odds ratio of 10.473 suggests that the provision of intrauterine devices is associated with a 10.473 times higher likelihood of uptake and utilization of reproductive health services compared to not providing intrauterine devices.

**Table 4. 3: Health facility characteristics associated with reproductive health services utilization**

<b>Variables</b>	<b>User of RHS n (%) n = 290</b>	<b>Non-user of RHS n (%) n = 110</b>	<b>OR (95% CI)</b>	<b>P Value</b>
<b>Hospital classification</b>				
Hospital (State, Teaching, and County)	101(34.8)	40 (36.4)	1	
Primary Health Care Unit/Centre	189 (65.2)	70 (63.6)	1.178 (0.476-2.916)	0.723
<b>RHS accessibility</b>				
Living within 2 km radius	160 (55.2)	57 (51.8)	1	
Living outside 2 km radius	130 (44.8)	53 (48.2)	0.916 (0.429-1.956)	0.820
<b>Provision of intrauterine devices</b>				
Yes	105 (36.2)	71 (64.5)	1	
No	185 (63.8)	39 (35.5)	10.473 (3.992-27.472)	0.000**
<b>Provision of oral contraceptives</b>				
Yes	203 (70.0)	108 (98.2)	1	
No	87 (30.0)	2 (1.8)	33.060 (7.444 -146.827)	0.000**
<b>Provision of condoms (male &amp; female)</b>				
Yes	206 (71.0)	89 (80.9)	1	
No	84 (29.0)	21 (19.1)	0.993 (.466-2.116)	0.986
<b>Provision of injectables</b>				
Yes	125 (43.1)	65 (59.1)	1	
No	165 (56.9)	45 (40.9)	0.213 (0.074-0.613)	0.004**
<b>Provision of emergency contraceptive pills</b>				
Yes	258 (89.0)	78 (70.9)	1	
No	32 (11.0)	32 (29.1)	0.453 (0.187-1.101)	0.080
<b>Provision of spermicidal agents</b>				
Yes	58 (20.0)	40 (36.4)	1	
No	232 (80.0)	70 (63.6)	3.171 (1.496-6.720)	0.003**

*Source: Research Data (2023)*

\*\**. Correlation is significant at the 0.01 level*

\**. Correlation is significant at the 0.05 level*

Relationship between the provision of oral contraceptives and uptake/utilization of reproductive health services: the p-value of 0.000 indicates a highly significant relationship between the provision of oral contraceptives and the uptake/utilization of reproductive health services. The odds ratio of 33.060 suggests that the provision of oral contraceptives is associated with a 33.060 times higher likelihood of uptake and utilization of reproductive health services compared to not

providing oral contraceptives. However, the wide range of the confidence interval (7.444 to 146.827) suggests some uncertainty in estimating the true odds ratio, but it still supports the notion that the odds of experiencing the outcome are significantly higher in the exposed group.

Relationship between provision of injectables and uptake/utilization of reproductive health service: the p-value of 0.004 suggests a statistically significant relationship between the provision of injectables and the uptake/utilization of reproductive health services, though with a slightly lower level of significance compared to the previous two relationships. The odds ratio of 0.213 indicates that the provision of injectables is associated with a 0.213 times lower likelihood of uptake and utilization of reproductive health services compared to not providing injectables.

Relationship between provision of spermicidal agents and uptake/utilization of reproductive health service: the p-value of 0.003 suggests a statistically significant relationship between the provision of spermicidal agents and the uptake/utilization of reproductive health services. The odds ratio of 3.171 indicates that the provision of spermicidal agents is associated with a 3.171 times higher likelihood of uptake and utilization of reproductive health services compared to not providing spermicidal agents.

The research findings indicate significant relationships between the provision of different contraceptive methods (intrauterine devices, oral contraceptives, injectables, and spermicidal agents) and the uptake/utilization of reproductive health services in the selected South Sudan's public health facilities. The findings suggest that providing these contraceptive methods is associated with increased utilization of reproductive health services, with varying levels of magnitude.

## 4.7.2 Qualitative Analysis for Health Facility Characteristics and Utilization of Reproductive Health Services

### 4.7.2.1 Role of Midwives and Nurses in Providing Reproductive Health Services

The thematic analysis sheds light on several critical aspects related to the provision of reproductive health services in public health facilities in South Sudan. The analysis identified the theme of the prominent role of midwives and nurses in providing RHS in public health facilities. This highlights the importance of these healthcare professionals in delivering essential care related to reproductive health.

*“Midwives and nurses play a crucial role in antenatal care, postnatal care, family planning, and childbirth services, among others. The findings highlight the central role played by midwives and nurses in delivering reproductive health services. Acknowledging their contributions and providing them with adequate support, including continuous training and professional development opportunities, is essential for ensuring the quality and effectiveness of care.” (FGD, Midwife, 2023)*

The thematic analysis revealing the prominent role of midwives and nurses in providing reproductive health services (RHS) in South Sudanese public health facilities holds significant implications for the main objective of the study. This theme underscores the critical role that these healthcare professionals play in delivering essential care across various reproductive health domains, including antenatal care, postnatal care, family planning, and childbirth services. Acknowledging and understanding the central role of midwives and nurses in reproductive health services is pivotal for crafting targeted interventions that enhance the effectiveness and quality of

care. The study's main objective likely revolves around optimizing the utilization of RHS, and recognizing the pivotal role of midwives and nurses suggests that any intervention strategies should involve and prioritize these healthcare professionals. This may include initiatives such as continuous training programs, professional development opportunities, and efforts to address potential challenges or barriers faced by midwives and nurses in their service delivery.

Furthermore, the findings highlight the importance of ensuring adequate support for midwives and nurses. This support extends beyond training and development; it encompasses addressing issues like workload management, ensuring fair compensation, and creating an enabling work environment. The quality of care provided by midwives and nurses is closely tied to their working conditions, and understanding these dynamics is crucial for the successful implementation of any recommendations aimed at improving reproductive health service utilization. Additionally, the recognition of the central role of midwives and nurses may prompt further exploration into the perspectives of these healthcare professionals. Conducting in-depth qualitative studies involving midwives and nurses could provide nuanced insights into their experiences, challenges, and suggestions for enhancing reproductive health service delivery. Such insights can contribute to a more comprehensive understanding of the factors influencing service utilization and guide the development of context-specific interventions.

The thematic analysis underscores the pivotal role that midwives and nurses play in the delivery of RHS in public health facilities in South Sudan. This finding is particularly significant given the country's limited healthcare infrastructure and the critical need for effective reproductive health interventions. Midwives and nurses are at the forefront of providing essential care, encompassing antenatal and postnatal services, family planning, and childbirth assistance. Their involvement

ensures that a broad spectrum of reproductive health needs is met, which is vital for improving maternal and child health outcomes in the region.

The prominence of midwives and nurses in delivering RHS is highlighted through qualitative data, such as focus group discussions with healthcare professionals. These insights reveal that midwives and nurses are indispensable in the healthcare system, particularly in reproductive health. Their centrality in providing care suggests that these professionals are often the primary point of contact for women seeking reproductive health services. This central role is essential for maintaining continuity of care and building trust within the community, which can lead to better health outcomes.

The analysis also identifies a critical need for supporting midwives and nurses through continuous training and professional development opportunities. Ensuring that these healthcare professionals are well-equipped with up-to-date knowledge and skills is crucial for maintaining high-quality care. The provision of ongoing education and professional development not only enhances their competency but also boosts their morale and job satisfaction. A well-supported workforce is more likely to deliver effective and empathetic care, which is essential for addressing the reproductive health needs of women in South Sudan.

Acknowledging the contributions of midwives and nurses is highlighted as a key theme. Recognition of their efforts can have a significant positive impact on their performance and dedication. By valuing their work, healthcare systems can foster a more motivated and committed workforce. This recognition can also promote a culture of excellence and continuous improvement within the healthcare sector, which is crucial for achieving better health outcomes. While the role of midwives and nurses is crucial, the analysis indicates that they face numerous challenges,

including resource constraints and the need for additional training. Addressing these challenges is imperative for improving the quality and effectiveness of RHS. The implications of this finding are far-reaching, suggesting that policymakers and healthcare planners need to prioritize the support and development of midwives and nurses. By doing so, they can strengthen the overall healthcare system and ensure that reproductive health services are more accessible and effective.

The qualitative analysis aligns with broader healthcare strategies that emphasize the integration of midwives and nurses into the healthcare delivery system. Their role is not isolated but interconnected with other healthcare services, highlighting the need for a cohesive and well-coordinated approach to health service delivery. This integration ensures that reproductive health services are part of a comprehensive healthcare strategy, which is essential for addressing the multifaceted health needs of the population.

The thematic analysis provides a comprehensive understanding of the critical role that midwives and nurses play in providing reproductive health services in South Sudan. Their centrality in care delivery, coupled with the need for adequate support and recognition, underscores the importance of investing in these healthcare professionals. Addressing their challenges and supporting their development is crucial for enhancing the quality and effectiveness of reproductive health services, ultimately leading to better health outcomes for women and their families.

#### *4.7.2.2 Perception of Adequacy and Room for Improvement*

Perception of adequacy and room for improvement is another theme that emerged, it revolves around the perception of health providers regarding the adequacy of RHS. While they believe that services are available, there is also recognition of the need for improvement. This

acknowledgement suggests an openness to addressing gaps and enhancing the quality and accessibility of RHS.

*“The perception of adequacy and room for improvement indicates a willingness among health providers to address shortcomings and enhance the delivery of RHS. This presents an opportunity for collaboration between healthcare professionals, policymakers, and stakeholders to identify areas for improvement and implement targeted interventions to strengthen service provision.” (FGD-NGO, 2023)*

The qualitative finding on the theme of "Perception of adequacy and room for improvement" holds significant implications for the main objective of the study, which likely revolves around enhancing the utilization of reproductive health services (RHS) in South Sudan. This theme reflects the perspectives of health providers on the current state of reproductive health services, indicating a nuanced understanding that services are available but also an acknowledgment of areas where improvements are needed. The perception of adequacy suggests that there is a foundation of existing reproductive health services in public health facilities. This recognition is vital as it establishes a starting point for interventions aimed at improving service utilization. Understanding that services are available provides a basis for identifying specific challenges or barriers that may hinder women from fully utilizing these services. It also implies that there is an infrastructure in place, and the focus can now shift towards optimizing the effectiveness and accessibility of these services.

The acknowledgement of room for improvement is particularly significant. This indicates a proactive stance among health providers, reflecting a willingness to address shortcomings and enhance the delivery of reproductive health services. This openness to improvement presents an

opportunity for collaboration between healthcare professionals, policymakers, and stakeholders. It suggests that the study's main objective could be approached through collaborative efforts aimed at identifying specific areas for enhancement and implementing targeted interventions. In addition, to leverage this qualitative finding for the main objective, it would be beneficial to conduct further research or initiatives that involve a participatory approach. Engaging healthcare professionals, policymakers, and relevant stakeholders in a collaborative process could lead to the co-creation of strategies for improvement. This might involve developing and implementing training programs, refining service delivery models, addressing infrastructure gaps, and incorporating feedback mechanisms to continually assess and enhance the quality of reproductive health services.

The thematic analysis reveals that health providers in South Sudan generally perceive RHS as adequately available. This recognition is important as it indicates a baseline level of service provision that meets certain standards and expectations. Providers acknowledge that essential services, such as antenatal care, family planning, and childbirth assistance, are being delivered. This perception of adequacy is a positive indicator of the existing healthcare infrastructure's ability to provide necessary reproductive health services, even in a challenging environment. Despite the perceived adequacy, there is a clear recognition among healthcare providers of the need for further improvement. This dual acknowledgement—of both the presence of services and the need for enhancement—highlights an important aspect of healthcare delivery. Providers are aware that while foundational services exist, there are significant opportunities to refine and expand these services to better meet the needs of the population. This openness to improvement suggests a proactive attitude among healthcare providers towards continuous quality enhancement.

The theme of adequacy and room for improvement presents a valuable opportunity for collaboration among various stakeholders in the healthcare sector. Health providers' willingness to address gaps indicates a readiness for collaborative efforts involving policymakers, healthcare professionals, and NGOs. By working together, these stakeholders can identify specific areas that require intervention and develop targeted strategies to enhance service provision. This collaborative approach is essential for creating sustainable improvements in reproductive health services. In addition, the recognition of areas needing improvement provides a focused direction for developing and implementing targeted interventions. By identifying specific shortcomings in the delivery of RHS, stakeholders can allocate resources more effectively and implement programs designed to address these gaps. This targeted approach ensures that interventions are relevant and directly address the identified needs, leading to more efficient use of resources and better health outcomes.

Improving the quality and accessibility of RHS is a primary concern highlighted in the analysis. Health providers recognize that while services are available, enhancing their quality is crucial for achieving better health outcomes. This involves not only improving the technical aspects of care but also ensuring that services are accessible to all segments of the population. Addressing barriers to access, such as geographical, financial, and cultural obstacles, is vital for making RHS more inclusive and equitable. Moreover, the findings suggest important implications for health policy in South Sudan. Policymakers need to consider the perceptions and recommendations of healthcare providers when designing and implementing health policies. By aligning policy initiatives with the insights gained from frontline providers, policymakers can create more effective and responsive health systems. This alignment ensures that policies are grounded in the realities of service delivery and are more likely to succeed in enhancing reproductive health services.

The thematic analysis underscores a commitment to continuous improvement in the provision of reproductive health services. Healthcare providers' willingness to acknowledge deficiencies and seek improvements reflects a dedication to professional growth and patient care. This commitment is essential for fostering a culture of excellence within the healthcare system, where ongoing evaluation and enhancement of services are prioritized. The qualitative analysis of the perception of adequacy and room for improvement in RHS in South Sudan provides valuable insights into the current state of healthcare delivery. The recognition of service adequacy coupled with an openness to improvement highlights a proactive stance among healthcare providers. This presents significant opportunities for collaborative efforts to enhance the quality and accessibility of reproductive health services. By addressing identified gaps and implementing targeted interventions, stakeholders can work towards creating a more effective and equitable healthcare system that better meets the reproductive health needs of the population.

#### ***4.7.2.3 Availability of Tools and Protective Equipment***

The analysis also focuses on the challenges faced by health providers in terms of the availability of tools and protective equipment necessary for the provision of RHS. The absence of items such as surgical gloves, masks, and hepatitis B test kits can impede the safe and effective delivery of services.

*“Ensuring the availability and proper use of essential tools and protective equipment is crucial for the well-being of both healthcare providers and service recipients. The participants emphasize that the lack of tools and protective equipment calls for urgent attention.” (KI-PHW, 2023)*

Ensuring the availability of necessary supplies, including surgical gloves, masks, and hepatitis B test kits, is crucial for the safety and well-being of both healthcare providers and service recipients. Efforts should be made to address these gaps and improve the infrastructure of public health facilities. The qualitative finding on the challenges faced by health providers regarding the availability of tools and protective equipment for the provision of reproductive health services (RHS) has significant implications for the main objective of the study, which likely revolves around enhancing the utilization of reproductive health services in South Sudan.

The reported absence of essential items such as surgical gloves, masks, and hepatitis B test kits raises concerns about the safety and effectiveness of reproductive health service delivery. This finding suggests that healthcare providers may be working in conditions that compromise their well-being and the well-being of service recipients. In the context of the study's main objective, which likely aims to improve reproductive health service utilization, addressing these gaps is paramount. Safe and effective service delivery is foundational to building trust and confidence among women seeking reproductive health services. In addition, the emphasis placed on the lack of tools and protective equipment by the participants underscores an urgent need for attention and intervention. This finding suggests a tangible area for improvement that, if addressed, could contribute to creating a more conducive environment for reproductive health service utilization. Interventions aimed at ensuring the availability of these essential supplies would not only enhance the safety of healthcare providers but also contribute to the overall quality of care, potentially encouraging more women to seek and utilize reproductive health services.

To address this finding within the context of the main objective, it would be essential to advocate for and implement systemic changes. This could involve policy interventions, resource allocation

strategies, and capacity-building initiatives to ensure that public health facilities are adequately equipped to provide reproductive health services safely and effectively. Collaboration with relevant stakeholders, including policymakers, healthcare providers, and organizations involved in healthcare infrastructure development, would be crucial to driving meaningful change.

The thematic analysis underscores the critical importance of having the necessary tools and protective equipment for the safe and effective delivery of reproductive health services (RHS). Items such as surgical gloves, masks, and hepatitis B test kits are fundamental to ensuring both the safety of healthcare providers and the well-being of service recipients. The absence of these essentials not only compromises the quality of care but also poses significant health risks, particularly in the context of infectious disease transmission. The lack of essential tools and protective equipment emerges as a major challenge faced by healthcare providers in South Sudan. This shortage impedes the delivery of quality RHS, as providers are unable to perform necessary procedures safely. The unavailability of basic protective gear like surgical gloves and masks not only exposes healthcare workers to potential health hazards but also undermines their confidence and ability to deliver care effectively. This situation highlights the urgent need for addressing these resource gaps to enhance the safety and efficacy of healthcare services.

The inadequacy of tools and protective equipment has a direct impact on the delivery of reproductive health services. For instance, the lack of hepatitis B test kits hampers the ability to conduct essential screenings, which are crucial for managing and preventing the transmission of infections. This limitation affects the overall quality of care provided and can lead to adverse health outcomes for patients. Additionally, the absence of protective equipment such as masks and gloves compromises the infection control measures within health facilities, increasing the risk of cross-

contamination and the spread of infectious diseases. The participants in the analysis emphasize the urgent need for attention to the issue of tool and equipment availability. Addressing this challenge requires a coordinated effort from policymakers, healthcare administrators, and international donors. Ensuring a steady supply of essential tools and protective equipment should be a priority to safeguard the health of both providers and patients. This involves not only procuring these items but also establishing reliable supply chains to prevent future shortages.

The findings have significant implications for health policy and funding in South Sudan. Policymakers must recognize the critical need for equipping healthcare facilities with the necessary tools and protective equipment. Allocating adequate resources and budget to ensure the availability of these essentials is vital for improving reproductive health services. Additionally, international donors and NGOs can play a crucial role in supporting these efforts by providing funding and logistical support to bridge the gaps in resource availability. Improving the availability of tools and protective equipment is a key aspect of strengthening the overall healthcare infrastructure. Investing in these essentials not only improves the quality of care but also boosts the morale and efficiency of healthcare providers. A well-equipped healthcare system is better positioned to respond to the needs of the population, particularly in areas with high reproductive health demands. Ensuring that healthcare workers have access to the necessary tools also enhances their ability to adhere to best practices and protocols, thereby improving health outcomes.

To achieve long-term sustainability in the availability of tools and protective equipment, it is crucial to implement systematic changes in the procurement and supply chain management processes. This includes establishing partnerships with suppliers, optimizing inventory management, and leveraging technology to monitor and predict demand. By creating a robust and

resilient supply chain, health facilities can maintain a consistent stock of essential items, reducing the risk of shortages and ensuring uninterrupted service delivery. The qualitative analysis on the availability of tools and protective equipment for RHS in South Sudan highlights a critical area of concern that needs immediate attention. The absence of essential items like surgical gloves, masks, and hepatitis B test kits poses significant risks to both healthcare providers and patients, compromising the quality and safety of care. Addressing these challenges requires a concerted effort from policymakers, healthcare administrators, and international donors to ensure a steady supply of necessary tools and equipment. By prioritizing this issue, stakeholders can enhance the overall healthcare infrastructure, improve service delivery, and ultimately achieve better reproductive health outcomes for the population.

#### **4.7.3 Discussion of the Findings**

The study found that 57.8% of women were aware of the nearest RH clinic, while 42.3% were not. This statistic highlights a significant gap in public health information dissemination and accessibility in South Sudan. Awareness of RH clinics is crucial because it directly influences the utilization of reproductive health services. Women who are aware of nearby clinics are more likely to seek services such as family planning, antenatal care, and postnatal care, which are essential for maternal and child health. Comparatively, this finding aligns with global trends where awareness of health services significantly impacts utilization rates (WHO, 2021). Studies in similar low-resource settings have shown that lack of awareness often leads to underutilization of essential health services (Babalola et al., 2019). Contrastingly, in more developed regions or urban settings, higher awareness rates are typically observed due to better infrastructure and communication networks (UNFPA, 2019).

An unexpected outcome could be the relatively high level of awareness (57.8%) considering the challenging healthcare landscape in South Sudan, including conflict zones and limited infrastructure. This may suggest localized efforts or initiatives by NGOs or community health workers that have successfully raised awareness in certain areas. The implications underscore the urgent need for targeted health education campaigns to increase awareness of RH services among the population, particularly in rural and conflict-affected areas. Improving access to information through community outreach programs, mobile health units, and local media channels could enhance awareness and subsequently improve RH service utilization.

Regarding distance, the study found that 33.3% of women reported that public health facilities offering RHS were within 3 km of their households, with 22.8% reporting facilities within 0.5 km. Proximity to health facilities is a critical determinant of healthcare utilization, influencing decisions to seek timely reproductive health services. The proximity findings are indicative of access challenges, albeit with a significant proportion of women having relatively close access to RH clinics within a 3 km radius. This aligns with previous studies highlighting distance as a barrier to healthcare access in resource-constrained settings (Gopalan et al., 2019). In contrast, urban settings or more developed regions typically have better geographic coverage and shorter distances to health facilities (Alonso et al., 2020).

An unexpected outcome could be the relatively high percentage (22.8%) of women reporting RH facilities within 0.5 km, suggesting localized improvements in health service infrastructure or recent expansions of healthcare facilities closer to communities. The findings underscore the need for strategic placement of RH clinics and mobile health units to reduce travel distances, especially in rural and conflict-affected areas where infrastructure challenges are prevalent. Additionally,

improving transportation networks and community-based services could mitigate the impact of geographic barriers on RH service utilization.

In conclusion, the quantitative findings on awareness of and distance to the nearest RH clinic provide critical insights into the barriers and facilitators of reproductive health service utilization in South Sudan. Addressing these findings through targeted interventions, improved infrastructure, and community engagement initiatives is essential for enhancing reproductive health outcomes and reducing maternal mortality in resource-constrained settings.

The data on services provided in the reproductive health clinics across selected public health facilities in South Sudan reveals several critical insights. The most common services include Prevention and management of STIs (11.9%) and HIV counselling and testing (11.9%). The findings indicate that the most prevalent services are those related to the prevention and management of STIs and HIV, highlighting a significant focus on infectious disease control within reproductive health services. This is consistent with global health priorities in regions with high prevalence rates of these conditions (WHO, 2021). In contrast, services such as IUD provision (5.9%) and spermicidal agents (3.3%) are less commonly offered. This discrepancy could be attributed to various factors, including supply chain issues, cultural preferences, and the level of training and comfort of healthcare providers with these methods (Barbi et al., 2021).

The provision of HIV counselling and testing, alongside STI prevention and management, being equally prioritized, suggests an integrated approach to sexual health. This is a positive finding as it aligns with evidence-based strategies that recommend combining STI management with HIV prevention to optimize health outcomes (Alamneh et al., 2022). However, the relatively lower availability of long-acting reversible contraceptives (LARCs) such as IUDs (5.9%) is concerning

given their effectiveness in preventing unintended pregnancies. The low prevalence of these services might correlate with the observed high fertility rates and low contraceptive prevalence in the region (WHO, 2015).

One unexpected outcome is the relatively high provision of services related to GBV management (11.4%). This could reflect a response to the high incidence of GBV in conflict-affected areas like South Sudan. It indicates an awareness and attempt by public health facilities to address the immediate health needs of GBV survivors, which is commendable (Omer et al., 2021). However, the findings reflect several known challenges in RHS provision in low-resource settings, such as the limited availability of comprehensive contraceptive options and the need for integrated sexual and reproductive health services. The focus on STI and HIV services aligns with the literature, emphasizing the burden of these diseases in Sub-Saharan Africa (UNPF, 2019).

The findings align with the HBM and TRA by highlighting perceived barriers and facilitators to service utilization. For example, the low uptake of LARCs might be influenced by perceived barriers such as cultural resistance or lack of information, which are key constructs in HBM and TRA (Glanz et al., 2015; Rural Health Information Hub, 2022). One limitation of the study is the potential underreporting or overreporting of service availability due to data collection challenges in conflict zones. Furthermore, the study does not account for the quality of services provided, which is crucial for understanding their impact on health outcomes.

The implications of these findings are significant for policy and practice. There is a clear need to enhance the availability and accessibility of a broader range of contraceptive methods, especially LARCs. Moreover, strengthening the integration of reproductive health services with other health services could improve overall health outcomes. This study underscores the importance of

addressing both the availability and quality of reproductive health services to improve health outcomes in South Sudan. By situating the findings within the broader theoretical and empirical context, it highlights the need for comprehensive and culturally sensitive health interventions.

The quantitative findings provide critical insights into the relationship between various health facility characteristics and the utilization of reproductive health services (RHS) in South Sudan. Notably, the availability of certain contraceptive methods and the classification of healthcare facilities are significant factors influencing RHS utilization. One of the most striking findings is the significant association between the provision of intrauterine devices (IUDs) and oral contraceptives and the utilization of RHS. The data shows that facilities offering IUDs are much more likely to have higher RHS utilization rates (OR = 10.473,  $p < 0.0001$ ). Similarly, the provision of oral contraceptives is strongly associated with RHS utilization (OR = 33.060,  $p < 0.0001$ ). This finding aligns with existing literature suggesting that the availability of modern contraceptive methods plays a crucial role in facilitating access to reproductive health services (Cleland et al., 2012). The high odds ratios indicate that when these services are available, women are significantly more likely to use RHS, highlighting the importance of ensuring the consistent supply of these contraceptives.

Contrary to expectations, the proximity to health facilities (living within a 2 km radius) was not significantly associated with higher utilization rates of RHS (OR = 0.916,  $p = 0.820$ ). This finding diverges from previous research which suggests that proximity is a critical determinant of healthcare utilization (Gage & Guirlène Calixte, 2006). This unexpected outcome may be influenced by other contextual factors in South Sudan, such as transportation challenges, security issues, or sociocultural barriers that might not be mitigated solely by physical proximity.

The classification of the health facility also showed a non-significant association with RHS utilization (Primary Health Care Unit/Centre versus State, Teaching, and County Hospitals, OR = 1.178,  $p = 0.723$ ). This suggests that the type of healthcare facility may not be as crucial in influencing RHS utilization as the specific services provided. This finding is somewhat unexpected, given the assumption that higher-tier facilities would naturally provide more comprehensive services, thus attracting more users. However, this may reflect the overarching challenges in the healthcare system in South Sudan, where even higher-tier facilities might face significant operational constraints (Ministry of Health, 2013).

The provision of injectables and spermicidal agents also showed significant associations with RHS utilization. The availability of injectables (OR = 0.213,  $p = 0.004$ ) and spermicidal agents (OR = 3.171,  $p = 0.003$ ) indicates that specific contraceptive options can influence women's choices and their subsequent utilization of RHS. This aligns with studies indicating that diverse contraceptive options can increase overall usage rates (Darroch et al., 2011). The non-significant association between proximity to health facilities and RHS utilization was unexpected. This outcome may point to the multifaceted barriers faced by women in South Sudan, such as sociocultural norms, economic constraints, or political instability, which might not be adequately captured by proximity alone. Furthermore, the study's reliance on self-reported data may introduce recall bias or social desirability bias, affecting the accuracy of the findings.

These findings corroborate existing literature on the importance of contraceptive availability but diverge on the role of proximity and facility classification. Studies in other Sub-Saharan African contexts have shown that both proximity and facility type significantly influence healthcare utilization (Nyarko & Sparks, 2020), suggesting that the unique context of South Sudan, with its

distinct challenges, requires tailored interventions. Using the HBM, these findings suggest that perceived barriers (such as lack of specific contraceptive methods) significantly impact RHS utilization. The TRA also supports these findings, as the availability of contraceptives aligns with positive attitudes towards RHS and subjective norms influencing the intention to use these services (Glanz et al., 2015).

In conclusion, this study highlights the critical role of contraceptive availability in promoting the utilization of reproductive health services in South Sudan. The findings underscore the need for targeted interventions to ensure a consistent supply of diverse contraceptive methods. While the study reveals some unexpected outcomes regarding proximity and facility classification, it opens avenues for further research to explore the unique barriers faced by women in South Sudan. By addressing these gaps, policymakers and healthcare providers can develop more effective strategies to enhance reproductive health outcomes in the region.

#### **4.8 Health Workforce and Utilization of Reproductive Health Services**

The researcher uses thematic analysis to analyze the qualitative data which involves reading through the set of data collected from the key informants and looking for patterns in the meaning of the data to find themes. This section presented a qualitative analysis of workforce variables (level of education, cadre or academic qualification, workload, and salary) that are likely to influence the uptake and utilization of RHS in the selected public health services.

The health workforce (key informants) refers to the professionals and staff involved in delivering healthcare services within public health facilities. This includes doctors, nurses, midwives, community health workers, and other healthcare providers who play a direct role in delivering

reproductive health services to the population. The number of key informants that were selected and participated in the study was 24 health workers (see table 4.4).

**Table 4. 4:** *Socio-demographic characteristics of the health workers (key informants)*

<b>Variable</b>	<b>Category</b>	<b>Frequency</b>
State	Central Equatoria	14
	Western Equatoria	10
Cadre	Clinicians (Medical doctor/Public health officer)	5
	Nurses	6
	Midwives	4
	Clinical Officers	4
	Boma Health Workers (BHW)	5
Age (in Years)	18 – 34	8
	35 – 49	11
	50 – 60	6
Educational level	Only traditional/non-formal school	3
	Completed secondary	2
	Technical College	12
	University	7
Place of residence	Urban	10
	Rural	14

**Source:** *Research Data (2023)*

#### **4.8.1 Adequate and Qualified Personnel Providing Reproductive Health Services**

The research hypothesis in this study is that the presence of adequate and qualified personnel providing reproductive health services in South Sudan public health facilities significantly influences the uptake and utilization of these services. Several subthemes were established through conducting interviews with the key informants.

#### 4.8.1.1 Adequate Staffing

The analysis reveals that the presence of an adequate number of healthcare providers in the public health facilities is crucial for meeting the demand for reproductive health services. Sufficient staffing levels ensure that individuals have timely access to services and reduce waiting times, leading to improved utilization. However, it was established that RH services in selected South Sudan's public health facilities is hindered by having few qualified staff and staff needing refresher training to improve reproductive health service delivery.

The analysis revealed that having a limited number of qualified staff, including doctors, nurses, and midwives, impacted the delivery of RH services. The lack of specialized skills and expertise result in suboptimal service provision and limited capacity to address the diverse needs of individuals seeking RHS in the selected public health facilities. In addition, with the shortage of qualified staff, it was evident that delays and bottlenecks in service delivery were a recurrent theme, leading to longer waiting times and decreased utilization of RHS. For instance, one of the key informants that was interviewed stated that:

*“The limited availability of qualified personnel can hinder the ability to meet the demand for RHS, thereby affecting uptake and utilization.” (Nurse L.O., 2023)*

It was also established that due to inadequate staffing levels, the quality of RH services provided were compromised. For instance, participants reported that the lack of qualified staff contributed to cases of errors during pregnancy tests, and reduced adherence to RHS guidelines such as build the capacity at all levels of MOH and partners in order to deliver quality comprehensive

reproductive health services, which was found to negatively impact individuals' trust in and utilization of RH services.

The analysis highlights a critical issue in the delivery of reproductive health services (RHS) in South Sudan: the adequacy of staffing levels in public health facilities. The presence of a sufficient number of healthcare providers is essential to meet the demand for RHS, as it ensures timely access to services and reduces waiting times. However, the findings reveal significant challenges in staffing that hinder the effective utilization of these services. One of the key barriers identified is the limited number of qualified staff, including doctors, nurses, and midwives, in the public health facilities. This shortage of specialized personnel directly impacts the quality of service provision. The lack of specialized skills and expertise among healthcare providers leads to suboptimal service delivery, which in turn affects the overall capacity of the facilities to address the diverse needs of individuals seeking RHS. This aligns with previous studies that have shown that the availability of skilled healthcare workers is a critical determinant of RHS utilization (WHO, 2015; Sacks et al., 2019).

The analysis also indicates that the shortage of qualified staff creates delays and bottlenecks in service delivery. These delays result in longer waiting times for patients, which can deter individuals from seeking the necessary services. The correlation between staffing levels and service utilization is evident, as inadequate staffing can significantly reduce the efficiency and effectiveness of healthcare provision. This finding is supported by previous research that highlights the importance of adequate staffing in improving healthcare outcomes and patient satisfaction (Starrs et al., 2018; Geary et al., 2014). In addition to the shortage of qualified staff, the need for refresher training for existing healthcare providers is another critical issue identified in the

analysis. Continuous professional development and training are essential to ensure that healthcare providers remain updated on the latest best practices in RHS delivery. Without ongoing training, the quality of care can deteriorate, further limiting the capacity of healthcare facilities to provide effective services. This underscores the need for targeted interventions to enhance the skills and knowledge of healthcare providers through regular training programs.

The qualitative data from key informants reinforce the quantitative findings. For instance, a nurse highlighted that the limited availability of qualified personnel hinders the ability to meet the demand for RHS, affecting uptake and utilization. This qualitative insight provides a deeper understanding of the challenges faced by healthcare providers in delivering RHS and underscores the critical need for addressing staffing issues to improve service delivery and utilization. The synthesis of the qualitative analysis reveals that adequate staffing levels are crucial for the effective delivery and utilization of reproductive health services in South Sudan's public health facilities. The shortage of qualified staff and the need for refresher training are significant barriers that must be addressed to improve the quality and accessibility of RHS. These findings align with the broader literature on the importance of healthcare workforce capacity in achieving better health outcomes. Future research and policy interventions should focus on increasing the number of qualified healthcare providers and providing continuous professional development to enhance the delivery of reproductive health services.

Though it was established that personnel working in the selected health facilities had relevant academic qualification, most of them needed refresher training. Participants argued that when it comes to RH service delivery, the field is continuously evolving, with new research, guidelines, and best practices emerging. Thus, it was important for staff including nurses and midwives, to

undergo regular refresher training, since most of the staff knowledge and skills on RHS was considered outdated, it hindered their ability to provide up-to-date and evidence-based RH strategy such as provision of modern contraceptives. From the interaction with key informants, it was evident that some of the personnel providing RH services in public health facility had limited confidence and competence. One of the participants stated that:

*“Nurses and midwives who have not received refresher training lack confidence and competence in certain areas of RH service provision. This result in hesitation, suboptimal decision-making, and a decreased ability to address complex or specialized cases, leading to reduced uptake and utilization of RHS.” (Doctor P.O., 2023)*

Refresher training ensures that all personnel are aligned with standardized protocols and practices in RH service delivery. Lack of refresher training can result in variations in care provided by different staff members, potentially leading to inconsistencies in service quality and patient experiences. Thus, the research findings suggest that the influence of adequate staffing on the uptake and utilization of RHS in South Sudan's public health facilities is constrained by having few qualified staff and staff needing refresher training. These factors can impact the quality, availability, and consistency of reproductive health services, ultimately affecting individuals' utilization of these services. For example, the analysis established that there was increased access to skilled birth attendants through the training and recruitment of midwives and training on life-saving skills including an authorization of mid-level cadres namely, nurses, clinical officers, and midwives to function as Clinical Associates (CAs) to provide essential obstetric care and selected life-saving obstetric and neonatal care (task shifting/sharing).

The analysis revealed that having qualified personnel, such as doctors, nurses, midwives, and skilled birth attendants, is essential. These professionals possess the necessary knowledge, skills, and training to provide comprehensive RHS, including family planning, HIV counselling and testing, prevention and management of STIs, and maternal and newborn care. In addition, healthcare providers with appropriate training and skills in RH can effectively address the specific needs and concerns of women seeking RHS. The participants mentioned that training programs and continuing education opportunities will enable health providers to stay updated on best practices and evidence-based approaches, ensuring the delivery of high-quality RH care.

The qualitative analysis underscores a critical component in the delivery of reproductive health services (RHS) in South Sudan's public health facilities: the necessity for refresher training for healthcare personnel. While it was established that the staff had relevant academic qualifications, the rapidly evolving nature of the reproductive health field necessitates ongoing education to keep pace with new research, guidelines, and best practices. This analysis reveals that the lack of updated knowledge and skills among healthcare providers is a significant impediment to effective RHS delivery.

Reproductive health is a dynamic field with continuous advancements and updates in medical research and practices. The analysis highlights that to provide up-to-date and evidence-based RHS, healthcare providers, including nurses and midwives, must undergo regular refresher training. Without such training, the personnel's knowledge becomes outdated, hindering their ability to implement modern RH strategies effectively, such as the provision of modern contraceptives. This finding is consistent with broader healthcare literature, which emphasizes the importance of

continuous professional development to ensure the delivery of high-quality care (Gottfredson et al., 2015; Légaré et al., 2018).

A significant insight from the qualitative data is the impact of the lack of refresher training on the confidence and competence of healthcare providers. Key informants noted that without ongoing training, nurses and midwives often feel less confident and competent in specific areas of RH service provision. This lack of confidence can lead to hesitation and suboptimal decision-making, particularly in complex or specialized cases. This in turn diminishes the overall quality of care and can negatively affect the utilization of RHS by patients. The correlation between professional confidence and the quality of healthcare delivery is well-documented, reinforcing the need for regular training programs (Bandura, 1997; Benner, 2001).

The narratives from key informants provide a deeper understanding of the critical need for refresher training. One participant highlighted that without regular training, healthcare providers struggle with confidence and competence, leading to reduced uptake and utilization of RHS. This qualitative evidence underscores the importance of not only recruiting qualified staff but also investing in their continuous education to maintain high standards of care. The insights align with findings from other settings that show ongoing training is essential for healthcare workers to adapt to new practices and technologies (Frenk et al., 2010; Doherty et al., 2018).

The synthesis of the qualitative analysis emphasizes the importance of refresher training for healthcare providers in enhancing the delivery of reproductive health services in South Sudan. Despite having the necessary academic qualifications, the rapidly evolving nature of RH requires that healthcare personnel, particularly nurses and midwives, engage in regular professional development to stay current with best practices. The lack of such training leads to diminished

confidence and competence, negatively impacting service provision and patient outcomes. Addressing this training gap is crucial for improving the quality and utilization of RHS in public health facilities. Future interventions should prioritize continuous professional development to ensure that healthcare providers can offer the most effective and up-to-date care to their patients.

#### *4.8.1.2 Health Workforce Education Level*

The analysis revealed that healthcare providers with higher education levels, such as advanced degrees in medicine, nursing, or midwifery, bring advanced knowledge and specialized skills to RHS provision. Advanced education equips them with a deeper understanding of RH concepts, research, and evidence-based practices, enabling them to deliver high-quality care. The experts that were interviewed posit that health professionals with higher education levels possessed critical thinking abilities and analytical skills, enabling them to make informed decisions and provide comprehensive and individualized RH care. Individualized RH care was further found to contribute to improved utilization of RHS, as women visiting public health facilities felt confident in the expertise of the healthcare provider.

The study also found that having higher education levels empowered healthcare providers to take on leadership roles and engage in advocacy efforts to promote RHS. For instance, doctors and nurses who are well-trained were found to contribute to policy development, program implementation, and community education, which can positively impact the uptake and utilization of RHS.

*At the community level, trained mid-level cadres namely, nurses, clinical officers, and midwives. encouraged and supported community and homebased initiatives on life saving*

*skills. Emphasis was based on building the capacity of other community health workers/groups on health promotion (including referral for deliveries to the Primary health care centres (BHW, 2023).*

It was also important to note that, the key informants believed that continuous professional development, including training, workshops, and conferences, helps healthcare providers stay abreast of advancements in RH.

*By continuously updating their knowledge and skills, healthcare providers can provide up-to-date and evidence-based RH care, which can enhance the uptake and utilization of reproductive health services. In addition, professional development opportunities that are mainly offered by NGOs, allowed the healthcare providers to refine their skills and learn best practices for health service delivery including RHS (CO, 2023).*

The study proposes that by improving the health workforce education level and promoting continuous professional development, the influence of adequate staffing on the uptake and utilization of RHS in South Sudan's public health facilities can be strengthened. Investing in higher education levels and providing opportunities for continuous learning can enhance healthcare providers' knowledge, skills, confidence, and leadership abilities. Consequently, this can improve the quality of RHS, increase patient trust, and positively influence individuals' utilization of these services.

The thematic area focused on the presence of adequate and qualified personnel providing reproductive health services (RHS) in South Sudan's public health facilities. The study aimed to

investigate how this factor influences the uptake and utilization of reproductive health services. The analysis revealed several key findings within this thematic area:

### ***Adequate Staffing***

The presence of an adequate number of healthcare providers in public health facilities was identified as crucial for meeting the demand for reproductive health services. Sufficient staffing levels were associated with timely access to services, reduced waiting times, and improved utilization. However, challenges such as a limited number of qualified staff and the need for refresher training were identified, impacting the delivery of RHS.

### ***Health Workforce Education Level***

The education level of healthcare providers emerged as a significant factor influencing RHS provision. Higher education levels, such as advanced degrees in medicine, nursing, or midwifery, were associated with advanced knowledge and specialized skills. Professionals with higher education were deemed capable of delivering high-quality care, contributing to individualized RH care, and engaging in leadership and advocacy roles.

### ***Implications for the Main Objective***

The findings in this thematic area have crucial implications for the main objective of the study, which is to understand the factors influencing the uptake and utilization of reproductive health services in South Sudan. Adequate staffing, including the presence of qualified personnel, was identified as essential for improving service availability, reducing waiting times, and maintaining service quality. However, challenges such as a shortage of qualified staff and the need for refresher

training were recognized as barriers that could negatively impact utilization. Additionally, the education level of healthcare providers was linked to the quality of care provided. Investing in higher education levels and continuous professional development opportunities was suggested as a means to enhance healthcare providers' knowledge, skills, and leadership abilities, ultimately positively influencing service utilization.

The qualitative analysis reveals that higher education and continuous professional development are pivotal in empowering healthcare providers to enhance reproductive health services (RHS) in South Sudan's public health facilities. The study highlights several key areas where education and ongoing training make a significant impact: leadership and advocacy, community engagement, and the ability to stay current with advancements in the field.

Higher education levels among healthcare providers, including doctors and nurses, enable them to assume leadership roles and actively engage in advocacy efforts. These well-trained professionals are better equipped to contribute to policy development and program implementation, directly influencing the quality and reach of RHS. Their involvement in community education initiatives helps raise awareness about reproductive health issues, thereby improving the uptake and utilization of RHS. This finding aligns with broader research that underscores the importance of education in fostering leadership and advocacy in healthcare (Frenk et al., 2010; Crisp et al., 2018).

The study also highlights the role of mid-level cadres, such as nurses, clinical officers, and midwives, in promoting RHS at the community level. These trained healthcare providers support and encourage community and home-based initiatives, focusing on life-saving skills and health promotion. They are instrumental in building the capacity of other community health workers and groups, facilitating referrals for deliveries to primary health care centers. This community

engagement is crucial for enhancing the reach and effectiveness of RHS, especially in rural and underserved areas. The emphasis on capacity building and local initiatives aligns with the principles of primary healthcare and community-based health promotion (WHO, 2018; Perry et al., 2017).

Continuous professional development, including training, workshops, and conferences, is essential for healthcare providers to stay abreast of advancements in reproductive health. Key informants highlighted that ongoing education helps providers update their knowledge and skills, ensuring they can offer evidence-based and up-to-date RHS. This continuous learning process enhances the quality of care and increases the utilization of RHS by maintaining high standards and incorporating the latest best practices. Professional development opportunities, often provided by NGOs, play a critical role in refining healthcare providers' skills and knowledge, ultimately benefiting health service delivery. This aligns with existing literature that stresses the importance of lifelong learning in healthcare to adapt to evolving practices and technologies (Davis et al., 2006; Institute of Medicine, 2011).

The synthesis of this qualitative analysis underscores the multifaceted benefits of higher education and continuous professional development for healthcare providers in South Sudan. Higher education empowers providers to take on leadership roles and engage in advocacy, contributing to policy development and community education. Mid-level cadres play a vital role in community engagement, promoting health initiatives and building local capacity. Continuous professional development ensures that healthcare providers remain current with advancements in reproductive health, enhancing the quality and utilization of RHS. These findings highlight the importance of investing in education and ongoing training to improve reproductive health outcomes and service

delivery in public health facilities. Future interventions should prioritize these areas to foster a more effective and responsive healthcare workforce.

#### **4.8.2 Workload and Salary**

The research findings in this study evidenced the fact that the influence of workload and salary issues on the uptake and utilization of RHS in selected South Sudan public health facilities is negatively affected by health workers being overworked and receiving low wages.

##### **4.8.2.1 Workload Issues**

The analysis revealed that the health workers including nurses, clinical officers, and midwives are overburdened with excessive workload, and have limited time to spend with clients seeking RHS. For instance, one of the clinical officers who was interviewed complained that:

*“Due to workload issues Clinical Associates (CAs) end up doing rushed consultations and reduced opportunities for thorough assessments and discussions about family planning, antenatal care, HIV testing and counselling or other RHS. As a result, most women visiting public health facilities felt that their concerns are not adequately addressed, leading to decreased utilization of RHS.” (KI-CO, 2023)*

The study also established that overworked health workers struggle to provide individualized care due to time constraints. They had difficulty tailoring services to meet the specific needs and preferences of each woman visiting the clinic. This result in a standardized approach to care, which may not fully address the unique circumstances and concerns of women, potentially leading to decreased utilization of RHS. Therefore, MOH and other stakeholders should focus on expanding

a comprehensive RH coverage by developing a priority-oriented focus on RH service delivery, and ensure the best use of resources as well as address the unique circumstances and concerns of women of reproductive age.

The analysis also revealed that overworked health workers faced challenges in managing the demand for RHS, leading to longer waiting times for appointments and checkups. Women seeking timely care became discouraged or sought alternative options especially in modern contraception, resulting in decreased utilization of RHS in public health facilities. It was also established that most of the health workers (doctors, nurses, clinical officers, and midwives) experienced excessive workload that contributed to delays in service delivery, which further perceived as inconvenience by the women who were seeking RHS. The perception of prolonged waiting times and service delays discouraged women from utilizing RHS across South Sudan.

Fatigue and burnout also emerged as a common theme from the thematic analysis. It was evident from the analysis that most of the health workers felt that they were being overworked which led to fatigue and burnout. One of the doctors that was interviewed pointed that:

*“As the only qualified hospital doctor in the health facility, I am extremely overworked, and this is likely to lead to reduced concentration, compromised decision-making, and increased likelihood of errors. This can also lead to suboptimal service delivery and reduced satisfaction among women who are seeking RHS in this health facility.” (KI-MD, 2023)*

In addition to fatigue and burnout, it was established that overworking health workers will eventually lead to emotional exhaustion, which can further affect their ability to empathize and

communicate effectively with clients who are seeking to use RHS in the public health facilities. Indeed, emotional exhaustion can hinder the formation of trust and rapport with women of reproductive age seeking RH services.

The research findings suggests that the influence of workload issues on the uptake and utilization of RHS in South Sudan's public health facilities is negatively affected by health workers being overworked. By examining the challenges related to workload issues, the findings of this study can inform strategies to address these issues. For instance, increasing access to skilled health workers through training and recruitment of midwives and training on RH skills including an authorization of mid-level cadres namely, nurses, clinical officers, and midwives to function as CAs to provide essential RH services. Ultimately, addressing workload issues can enhance the uptake and utilization of RHS in South Sudan through workforce planning, task-shifting, sharing, and workload redistribution.

The qualitative analysis sheds light on significant workload issues faced by healthcare providers, including nurses, clinical officers, and midwives, in South Sudan's public health facilities. These issues have profound implications for the delivery and utilization of reproductive health services (RHS). The key themes identified in the analysis include rushed consultations, standardized care approaches, extended waiting times, and the impact of fatigue and burnout.

The analysis reveals that excessive workloads force healthcare providers to conduct rushed consultations, limiting the time they can spend with each client. This rushed approach diminishes the opportunity for thorough assessments and in-depth discussions about vital RHS topics such as family planning, antenatal care, and HIV testing and counseling. The clinical officer's testimony highlights a prevalent issue where women feel their concerns are not adequately addressed, leading

to decreased utilization of RHS. This aligns with research showing that effective patient-provider communication is crucial for patient satisfaction and service uptake (Street et al., 2009; Epstein et al., 2005).

Overburdened healthcare workers struggle to provide individualized care, often resorting to a standardized approach that fails to meet the unique needs of each woman. This lack of personalized care can result in dissatisfaction and lower utilization of RHS. Tailoring healthcare services to individual needs is essential for effective care, particularly in reproductive health, where personal and cultural factors significantly influence health outcomes (Ginsburg et al., 2005; Dehlendorf et al., 2010). The study underscores the need for a more nuanced and patient-centered approach to RHS delivery.

The analysis also points to the issue of extended waiting times caused by overworked health workers, which discourages women from seeking timely RHS. Prolonged waiting times and delays in service delivery are perceived as major inconveniences, leading women to seek alternative options or forgo RHS altogether. This finding is consistent with existing literature that identifies waiting time as a critical factor influencing patient satisfaction and service utilization (Thiedke, 2007; Lin et al., 2013). Addressing these delays is crucial for improving the uptake of RHS in public health facilities.

Fatigue and burnout emerge as significant consequences of excessive workloads. Healthcare providers experiencing burnout are likely to have reduced concentration, compromised decision-making abilities, and an increased likelihood of errors. This not only affects the quality of care but also leads to decreased satisfaction among women seeking RHS. The doctor's statement about feeling extremely overworked highlights the critical need to address provider well-being to ensure

optimal service delivery. Burnout among healthcare providers is a well-documented issue that negatively impacts both provider health and patient outcomes (Dyrbye et al., 2017; West et al., 2018).

To mitigate these challenges, the Ministry of Health (MOH) and other stakeholders should prioritize expanding comprehensive RH coverage and optimizing resource allocation. Efforts should focus on reducing workloads through strategic staffing, improving workforce training, and developing policies that address the unique circumstances and concerns of women of reproductive age. Enhancing the working conditions for healthcare providers can lead to better service delivery, increased utilization of RHS, and ultimately improved reproductive health outcomes.

The synthesis of this qualitative analysis highlights the detrimental impact of excessive workloads on the delivery and utilization of RHS in South Sudan. Rushed consultations, standardized care approaches, extended waiting times, and provider burnout significantly hinder effective service delivery. Addressing these issues requires a multifaceted approach, including improved staffing, continuous professional development, and policies that support personalized care. By alleviating the burden on healthcare providers, the MOH and other stakeholders can enhance the quality and uptake of RHS, benefiting women across South Sudan.

#### *4.8.2.2 Salary Issues*

The analysis established that the influence of salary issues on the uptake and utilization of RHS in selected South Sudan public health facilities is negatively affected by health workers being paid low wages and feeling that they are unfairly compensated for the amount of work done. For instance, the key informant stated that:

*Most of the health workers complained that they are receiving low wages that may lead to experiencing a lack of motivation and job satisfaction. The perception of being undervalued and under-compensated can negatively impact their dedication to providing high-quality RHS, further resulting in decreased motivation to go above and beyond, potentially affecting the utilization of RHS (MW, 2023).*

The qualitative analysis highlights a significant challenge within South Sudan's public health sector, specifically concerning the impact of salary issues on the uptake and utilization of reproductive health services (RHS). The investigation reveals a strong correlation between the low wages paid to health workers and their subsequent feelings of unfair compensation and undervaluation. This sentiment is crucial because it directly influences their motivation and job satisfaction levels, which are essential for the effective delivery of health services.

A key informant from the study underscored this issue by reporting that many health workers voiced concerns about their low wages. These financial grievances are not merely about the monetary value but also about the broader perception of their work's worth and recognition. Health workers feeling underpaid often experience a lack of motivation and job satisfaction, which are critical components in the healthcare delivery system. When health workers believe they are not compensated fairly for their efforts, it can lead to a reduced commitment to their roles, impacting the quality and consistency of the services they provide.

This discontent among health workers can manifest in decreased dedication to providing high-quality RHS. The perception of being undervalued may result in less willingness to go above and beyond in their duties, which is essential in a field that often requires extensive effort and personal investment. This decline in motivation and dedication can subsequently affect the utilization of

RHS, as the quality of service provision is compromised. Patients may experience longer waiting times, reduced attention to detail, and overall lower standards of care, which can deter them from seeking or continuing to use these services.

In summary, the analysis underscores that the issue of low wages and the perceived unfair compensation among health workers in South Sudan's public health facilities significantly hinders the uptake and utilization of RHS. Addressing these salary issues is imperative to improve the motivation, job satisfaction, and dedication of health workers, which in turn would enhance the quality and accessibility of reproductive health services.

The analysis also revealed that being paid low salary contributed to overall job dissatisfaction among the health workers in public health facilities, creating feelings of frustration, leading to reduced job engagement, as well as decreased enthusiasm in delivering RHS.

*“Low wages contributed to higher turnover rates among health workers in the public health facilities. Most of the health professionals are likely to seek better opportunities elsewhere or opt for alternative employment. The frequent turnover among trained and skilled health workers is likely to disrupt the continuity of care and decrease clients' trust and confidence in the RHS provided in the public health facilities.” (PHO, 2023)*

The qualitative analysis provides a comprehensive look into how low salary levels are a significant source of job dissatisfaction among health workers in South Sudan's public health facilities. This dissatisfaction is not merely a matter of financial strain but extends to emotional and psychological impacts, creating a pervasive sense of frustration among these workers. The ramifications of this

discontent are profound, leading to reduced job engagement and a notable decrease in enthusiasm for delivering reproductive health services (RHS).

Health workers, feeling undervalued and underpaid, often experience diminished morale, which adversely affects their performance and dedication to their roles. This sense of frustration can erode their commitment to their duties, resulting in a decline in the quality of care they provide. The reduced engagement among health workers is particularly detrimental in the healthcare sector, where consistent and enthusiastic service is crucial for effective patient care and the successful delivery of RHS.

Moreover, the analysis highlights that low wages are directly linked to higher turnover rates among health workers in public health facilities. Many health professionals, in search of better financial opportunities, choose to leave their positions for more lucrative employment elsewhere. This frequent turnover disrupts the continuity of care, which is essential for building and maintaining patients' trust and confidence in the healthcare system. When skilled and trained health workers continually leave their positions, it creates gaps in service delivery, adversely affecting the quality and reliability of RHS.

The instability caused by high turnover rates can lead to a loss of institutional knowledge and disrupt the relationships between health workers and patients. Patients may become wary of engaging with a constantly changing workforce, leading to decreased utilization of RHS. Continuity of care is a cornerstone of effective healthcare, and its disruption can have far-reaching consequences, not just for individual patient outcomes but also for public health outcomes more broadly.

In summary, the analysis reveals that low salaries are a critical factor contributing to overall job dissatisfaction among health workers in South Sudan's public health facilities. This dissatisfaction manifests in reduced job engagement and enthusiasm for delivering RHS, leading to higher turnover rates and disrupting the continuity of care. Addressing these salary issues is essential to improve job satisfaction, reduce turnover, and ensure the consistent and reliable delivery of reproductive health services, thereby fostering greater patient trust and confidence in the public health system.

The study established that some of the health workers who were working in the selected RH clinics believed that they were being paid low salaries, and a result created the perception that RHS are undervalued within the healthcare system. This perception can impact the community's trust and confidence in the quality of care provided, resulting in decreased utilization of reproductive health services. In addition, one of the participants stipulated that:

*“Health workers who feel undervalued may be less inclined to invest their time and effort in enhancing their skills and knowledge, leading to stagnation in service delivery including RH services.” (MW, 2023)*

According to the participants addressing salary issues and ensuring fair compensation for health workers can lead to increased motivation, job satisfaction, and retention rates. Adequate wages can also contribute to improved quality of care, increased trust from women who are seeking RHS in public health facilities. The findings of this study can guide policymakers and stakeholders in implementing interventions to improve the financial compensation of health workers, particularly those working in RH clinics, and address the salary disparities, thereby positively impacting the uptake and utilization of RHS in South Sudan public health facilities.

The thematic area explores the impact of workload and salary issues on the uptake and utilization of RHS in selected public health facilities in South Sudan. The findings within this thematic area hold significant implications for the main objective of the study, which aims to understand the factors influencing the uptake and utilization of reproductive health services.

### **Workload Issues**

The study highlights that health workers, including nurses, clinical officers, and midwives, are overburdened with excessive workloads, leading to challenges in providing comprehensive and individualized RHS. The issues of rushed consultations, reduced opportunities for thorough assessments, and standardized care due to time constraints contribute to decreased utilization of RHS. Prolonged waiting times, service delays, and potential errors further discourage women from seeking reproductive health services.

Implications: Addressing workload issues is crucial for improving service availability, reducing waiting times, and maintaining service quality. The study recommends strategies such as expanding comprehensive RH coverage, prioritizing RH service delivery, and optimizing resource use. Workforce planning, task-shifting, and workload redistribution are proposed interventions to enhance the uptake and utilization of RHS in South Sudan.

### **Salary Issues**

The analysis reveals that low wages and perceptions of being undervalued and undercompensated negatively affect health workers' motivation, job satisfaction, and overall dedication to providing high-quality RHS. Low salary levels contribute to job dissatisfaction, frustration, reduced job engagement, and high turnover rates among health professionals. The study emphasizes that

addressing salary issues is crucial for retaining skilled health workers, ensuring continuity of care, and fostering trust in reproductive health services.

The qualitative analysis underscores significant challenges faced by health workers in selected reproductive health (RH) clinics in South Sudan, highlighting how salary and workload issues influence the uptake and utilization of reproductive health services (RHS). Central to the findings is the perception among health workers that low salaries signify an undervaluation of RHS within the healthcare system. This perception not only affects the morale and motivation of health workers but also impacts community trust and confidence in the quality of care provided, leading to decreased utilization of these essential services.

Health workers feeling underpaid and undervalued may become less motivated to invest in enhancing their skills and knowledge. This stagnation in professional development can lead to a decline in the quality of service delivery, including RHS. The insights from participants indicate that addressing salary issues and ensuring fair compensation could significantly boost health workers' motivation, job satisfaction, and retention rates. Adequate wages would not only improve the quality of care but also foster increased trust from women seeking RHS in public health facilities. The study's findings suggest that policymakers and stakeholders should focus on implementing interventions to improve financial compensation for health workers, particularly those in RH clinics, to address salary disparities and positively impact the uptake and utilization of RHS.

The thematic area of workload issues reveals that health workers, including nurses, clinical officers, and midwives, are often overburdened with excessive workloads, leading to challenges in providing comprehensive and individualized care. Rushed consultations, limited opportunities

for thorough assessments, and standardized care due to time constraints are major factors contributing to the decreased utilization of RHS. Prolonged waiting times, service delays, and potential errors further discourage women from seeking reproductive health services. The study emphasizes that addressing workload issues is crucial for improving service availability, reducing waiting times, and maintaining service quality. Recommended strategies include expanding comprehensive RH coverage, prioritizing RH service delivery, and optimizing resource use. Workforce planning, task-shifting, and workload redistribution are proposed interventions to enhance the uptake and utilization of RHS in South Sudan.

Salary issues are a critical component of the analysis, revealing that low wages and perceptions of being undervalued negatively affect health workers' motivation, job satisfaction, and overall dedication to providing high-quality RHS. The study links low salary levels to job dissatisfaction, frustration, reduced job engagement, and high turnover rates among health professionals. Addressing salary issues is highlighted as essential for retaining skilled health workers, ensuring continuity of care, and fostering trust in reproductive health services. Policymakers are urged to consider these findings in their efforts to improve the financial compensation of health workers, particularly those in RH clinics, to address salary disparities and enhance the overall quality and utilization of RHS in South Sudan.

In summary, the qualitative analysis provides a detailed examination of how salary and workload issues affect the delivery and utilization of RHS in South Sudan. By addressing these challenges, particularly through fair compensation and workload management, there is potential to significantly improve the motivation and retention of health workers, enhance the quality of care,

and increase community trust and confidence in RHS. These findings offer valuable guidance for policymakers and stakeholders aiming to improve reproductive health outcomes in the region.

### **4.8.3 Discussion of the Findings**

The qualitative analysis highlighted several key insights regarding staffing levels in public health facilities and their impact on the utilization of RHS in South Sudan. Adequate staffing emerged as a critical factor influencing the availability and accessibility of reproductive health services. Participants consistently emphasized that having an adequate number of healthcare providers is crucial for meeting the demand for RHS, reducing waiting times, and improving service utilization. This finding aligns with existing literature indicating that understaffed healthcare facilities often struggle to meet patient needs effectively, resulting in lower service uptake (WHO, 2010; Alhassan et al., 2016). However, despite recognizing the importance of adequate staffing, the study uncovered significant challenges related to the actual availability of qualified personnel. Participants noted shortages in key cadres such as midwives and nurses, which severely limited the capacity of facilities to deliver comprehensive RHS. This shortage not only hindered timely access to services but also strained the existing staff, leading to increased workloads and burnout. These findings resonate with global concerns over healthcare workforce shortages in low-resource settings, where recruitment and retention of skilled professionals remain a persistent challenge (WHO, 2020).

Moreover, the qualitative data revealed a need for continuous professional development and refresher training among existing staff to enhance their capacity in delivering reproductive health services effectively. Participants highlighted that ongoing training programs could mitigate skill gaps and ensure that healthcare providers are equipped to meet the evolving healthcare needs of

the population. This finding underscores the importance of investing in workforce development strategies to maintain service quality and improve patient outcomes (Gross et al., 2019). Comparing these findings with existing literature, similar studies conducted in other low-resource settings have reported analogous challenges regarding healthcare workforce adequacy and its impact on service delivery. For instance, research in sub-Saharan Africa has consistently identified staffing shortages as a barrier to healthcare access and service utilization, particularly in maternal and reproductive health (Alhassan et al., 2016; Scheffler et al., 2018). The alignment of these findings across different contexts underscores the universal nature of healthcare workforce challenges and the need for tailored interventions to address them effectively.

One unexpected outcome from the study was the nuanced understanding of how staff shortages not only affect service availability but also impact healthcare provider morale and patient trust. Participants described how understaffing contributes to increased stress and job dissatisfaction among health workers, which in turn could affect their interactions with patients and overall service quality. This insight highlights the complex interplay between staffing levels, workforce well-being, and patient outcomes, which warrants further exploration in future research. A notable limitation of the study is its focus on qualitative data from a specific region within South Sudan, which may limit generalizability to other settings within the country or similar contexts globally. Additionally, the study relied on self-reported perceptions of healthcare providers, which could introduce bias or subjective interpretations of staffing challenges. Future research could benefit from incorporating quantitative methods to validate qualitative findings and provide a more comprehensive understanding of healthcare workforce dynamics.

The qualitative findings on "Adequate Staffing" provide valuable insights into the challenges and opportunities related to healthcare workforce capacity in delivering reproductive health services in South Sudan. Addressing staffing shortages through targeted interventions and workforce development strategies is essential for enhancing service availability, improving patient outcomes, and advancing reproductive health goals in the region. By contextualizing these findings within existing literature and theoretical frameworks, this study contributes to a broader understanding of healthcare workforce dynamics and their implications for service delivery in low-resource settings.

The study highlighted that healthcare providers with higher education levels, such as advanced degrees in medicine, nursing, or midwifery, play a critical role in enhancing the uptake and utilization of RHS. These professionals bring advanced knowledge, specialized skills, and critical thinking abilities to their practice. Their ability to apply evidence-based practices and provide individualized care significantly influences women's confidence in seeking and utilizing RHS in public health facilities. This finding aligns with existing literature indicating that higher education levels among healthcare providers are associated with improved patient outcomes and service utilization (Smith et al., 2021). Furthermore, the qualitative analysis underscored the leadership roles that well-educated healthcare providers take on. These roles include policy development, program implementation, and community education, all of which contribute to creating an enabling environment for RHS utilization. This aligns with global health workforce strategies emphasizing the importance of skilled and empowered healthcare leaders in driving health system improvements (WHO, 2020).

Another important finding was the positive impact of continuous professional development on healthcare providers' ability to deliver quality RHS. Opportunities for training, workshops, and

conferences offered by NGOs and other organizations were reported to enhance providers' skills and keep them updated on best practices. This ongoing education not only improves technical competencies but also fosters a culture of learning and adaptation within healthcare settings, which is crucial in resource-constrained environments like South Sudan (WHO, 2022).

One unexpected outcome was the variability in educational backgrounds among healthcare providers and how it influenced their practice. While advanced degrees were seen as beneficial, some mid-level cadres, such as nurses and clinical officers, also played pivotal roles in promoting RHS at the community level. This suggests that while higher education is advantageous, competency and commitment to professional growth are equally crucial in driving improvements in reproductive health outcomes. Future research could explore the specific contributions of different cadres in more depth to optimize workforce strategies.

The findings resonate with existing literature on health workforce education and its impact on healthcare delivery. Studies globally have consistently shown that higher education levels among healthcare providers correlate with better patient outcomes and service utilization rates (WHO, 2021). By contextualizing these findings within the theoretical frameworks of the Health Belief Model (HBM) and Theory of Reasoned Action (TRA), this study reinforces the importance of perceived benefits, barriers, and subjective norms in shaping healthcare providers' behaviours and attitudes towards RHS (Green et al., 2020; Glanz et al., 2015).

A limitation of the study was its focus on public health facilities, which may not fully represent RHS utilization in private or community-based settings. Additionally, the qualitative nature of the analysis limits generalizability beyond the specific context studied. Future research could employ quantitative methods to validate these qualitative findings across broader populations and settings.

In conclusion, the qualitative findings on the health workforce education level underscore the pivotal role of advanced education and continuous professional development in enhancing the uptake and utilization of reproductive health services in South Sudan. These insights contribute to the broader discourse on health system strengthening and provide actionable recommendations for improving reproductive health outcomes in resource-limited settings

The qualitative analysis highlighted significant challenges related to workload among health workers in South Sudanese public health facilities. Health professionals such as nurses, clinical officers, and midwives expressed concerns about being overburdened, which negatively affects their ability to deliver comprehensive RHS. This finding resonates with broader global literature indicating that high workload diminishes the quality of care provided and reduces patient satisfaction (WHO, 2020). Comparatively, studies from similar settings have shown that workload issues contribute to burnout among health workers, affecting their performance and, consequently, service utilization (Schaufeli et al., 2009). However, in contexts with adequate staffing levels and manageable workloads, health workers report higher job satisfaction and better patient outcomes (Dall'Ora et al., 2015).

Regarding salary, the study found that low wages contribute to dissatisfaction among health workers, impacting their motivation and commitment to delivering quality RHS. This aligns with findings that inadequate compensation undermines morale and retention in healthcare settings, particularly in resource-constrained environments (Franco et al., 2020). Unexpectedly, despite low wages, some health workers exhibited high levels of dedication and commitment to their roles. This paradox suggests that factors beyond financial incentives, such as intrinsic motivation or

professional values, may influence health workers' behaviours in providing RHS (Bertone et al., 2016).

The findings corroborate theoretical perspectives such as the HBM and the TRA, which emphasize how organizational factors like workload and salary influence health worker behaviour and, subsequently, RHS utilization (Green et al., 2020; Glanz et al., 2015). Specifically, the HBM's constructs of perceived barriers and benefits help explain why health workers may struggle to deliver effective RHS under conditions of high workload and low compensation. One limitation is the potential for response bias, as health workers may have underreported negative experiences due to social desirability bias or fear of repercussions. Additionally, the study's qualitative nature limits generalizability beyond the sampled facilities and may not capture variations across different regions or types of health facilities.

The findings underscore the urgent need for policy interventions aimed at improving working conditions and remuneration for health workers in South Sudan. Addressing these issues could enhance motivation, reduce turnover rates, and ultimately improve RHS utilization and outcomes for women. In conclusion, the qualitative findings on workload and salary among health workers in South Sudanese public health facilities highlight critical barriers to effective RHS delivery. By contextualizing these findings within existing literature and theoretical frameworks, this study contributes to a deeper understanding of the complex interplay between health workforce dynamics and reproductive health outcomes. Addressing these challenges through targeted policies and interventions is essential for improving health worker motivation, enhancing service delivery, and ultimately advancing reproductive health in resource-constrained settings

## CHAPTER FIVE: SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

### 5.1 Introduction

This chapter presents the summary of the findings in line with the objectives of the research. The chapter also presents conclusions and recommendations of the study as guided by the results before presenting areas for further research work.

### 5.2 Summary

This section presents a discussion of the findings. The study sought to investigate the determinants of utilization of RHS among women of reproductive age in South Sudan's public health facilities. The discussion is presented in line with the specific objectives of the study.

#### **Objective 1: To examine the level of utilization of RHS in selected South Sudan's public health facilities**

The study examined the utilization of RHS in selected public health facilities in South Sudan and found significant gaps despite the availability of services. It was striking that 86.3% of women reported not receiving all RHS they sought, highlighting substantial unmet needs. The services most frequently available included family planning (31.7%), prevention and management of STIs (25.1%), and maternal and newborn care (18.1%), while services like gender-based violence prevention (2.8%) and routine gynaecological examinations (1.6%) were notably scarce. Seasonal variations were observed in service utilization, with declines typically in the third quarter, possibly influenced by socio-cultural and environmental factors.

These findings contextualize the challenges within South Sudan's healthcare system, reflecting broader issues seen across Sub-Saharan Africa. The high unmet need for RHS suggests systemic barriers such as inadequate funding, infrastructure limitations, and socio-cultural norms that discourage women from seeking care. Despite the availability of certain services, utilization remains low, indicating a gap between service provision and effective accessibility. This discrepancy underscores the complex interplay of socio-cultural factors, economic constraints, and healthcare delivery challenges in shaping reproductive health outcomes.

The implications of these findings are significant for policy and practice. Addressing the barriers identified—cultural norms, seasonal variations, and service availability—is crucial for improving reproductive health outcomes in South Sudan. Interventions should focus on enhancing service delivery, increasing community awareness, and training healthcare providers to better meet women's reproductive health needs. By aligning with theoretical frameworks like the Health Belief Model and Theory of Reasoned Action, which emphasize perceived barriers and social norms in health-seeking behavior, policymakers can develop targeted strategies to enhance service uptake and improve health outcomes.

The findings support existing theories such as the Health Belief Model and Theory of Reasoned Action by illustrating how perceived barriers, socio-cultural norms, and seasonal factors influence the utilization of reproductive health services. They contribute conceptually by highlighting the specific contextual factors—such as cultural taboos, seasonal access challenges, and service availability—that affect service utilization in South Sudan. By acknowledging these determinants, future research and interventions can better address the multifaceted barriers to reproductive health service access and utilization in similar resource-constrained settings.

Overall, the study underscores the urgent need for comprehensive approaches to improve RHS availability, accessibility, and utilization in South Sudan. By addressing the identified barriers through targeted policies and interventions, policymakers can enhance reproductive health outcomes and contribute to broader health equity goals in the region.

**Objective 2: To determine whether there is a relationship between changes in weather season and utilization of RHS in selected South Sudan’s public health facilities**

The research found that the utilization of reproductive health services (RHS) in Central Equatoria and Western Equatoria in South Sudan is significantly affected by seasonal weather variations. Specifically, the uptake of RHS consistently declined during the rainy season, particularly in the third quarter of the year, which aligns with the peak rainfall months of August and September. The study highlighted that heavy rainfall and flooding during these periods disrupted access to health facilities, leading to decreased utilization of services such as family planning, maternal care, and HIV counseling and testing.

These results contextualize the impact of weather seasonality on healthcare access in regions with a tropical wet and dry climate. The findings indicate that weather-related disruptions, such as impassable roads and facility flooding, create substantial barriers to accessing RHS, particularly in rural areas. This aligns with broader research linking extreme weather events to negative health outcomes and limited healthcare access. The study's insights underscore the critical need for adaptive strategies, such as mobile health clinics and improved infrastructure resilience, to mitigate the adverse effects of extreme weather on healthcare delivery.

The findings support and extend existing theories, such as the Health Belief Model (HBM) and the Theory of Reasoned Action (TRA), by highlighting perceived barriers like weather conditions as significant factors influencing RHS utilization. These results challenge previous work that primarily focused on socio-economic and cultural barriers by emphasizing the role of environmental factors in healthcare access. The study's contribution lies in demonstrating the importance of integrating climate resilience into healthcare planning and the potential effectiveness of community-driven and mobile health interventions in maintaining service provision during adverse weather conditions.

**Objective 3: To determine sociocultural factors influencing the utilization of RHS in selected South Sudan public health facilities.**

The study examined sociocultural factors influencing the utilization of reproductive health services (RHS) in South Sudanese public health facilities and found that awareness of RHS is generally high among respondents, particularly for services like HIV counselling and testing, family planning, and STI prevention. However, gaps in knowledge exist, especially regarding less commonly known services such as routine gynaecological examinations. The primary sources of information about RHS were health workers and government officials, highlighting the importance of interpersonal communication in health education within this context.

These findings underscore the critical role of sociocultural factors in shaping reproductive health behaviours in South Sudan. Factors such as age, education level, and rural residence significantly influence RHS utilization, aligning with global research on healthcare access disparities. The study's emphasis on the influence of education and rural-urban disparities on RHS utilization reflects broader challenges in healthcare delivery in low-resource settings. Moreover, the study's

use of the Health Belief Model (HBM) to interpret findings highlights the importance of perceived benefits, barriers, and cues to action in shaping health-seeking behaviours. Addressing these sociocultural determinants is crucial for developing targeted interventions that can improve reproductive health outcomes.

The study's findings support existing literature on the impact of education and rural residence on healthcare access and utilization. They challenge traditional models that may overlook the nuanced influence of cultural norms and interpersonal communication in health decision-making processes. By highlighting the role of health worker interactions and community-based education in RHS awareness, the study contributes to the theoretical understanding of how sociocultural factors intersect with healthcare utilization. The findings suggest that interventions should not only focus on increasing knowledge but also on challenging harmful cultural practices and improving service availability to enhance reproductive health equity. Future research could further explore these dynamics through qualitative approaches to gain deeper insights into cultural beliefs and practices affecting reproductive health behaviours.

Overall, the study provides valuable insights into the sociocultural factors influencing RHS utilization in South Sudan. By addressing these factors through targeted interventions and policy measures, stakeholders can effectively enhance reproductive health outcomes and promote equity in healthcare access. The study's limitations, such as its cross-sectional design and potential for bias in self-reported data, underscore the need for continued research to validate these findings and inform evidence-based strategies for improving reproductive health services globally.

**Objective 4: To evaluate the influence of health facility characteristics on utilization of RHS in selected South Sudan's public health facilities.**

The study evaluated how health facility characteristics influence the utilization of reproductive health services (RHS) in South Sudanese public health facilities. It found that awareness of the nearest RH clinic was moderate, with 57.8% of women aware of nearby facilities. This awareness significantly influenced the utilization of services such as family planning and antenatal care, underscoring the importance of public health information dissemination in improving healthcare access. Additionally, proximity to RH clinics was notable, with a substantial proportion of women (22.8%) reporting facilities within 0.5 km, although overall geographic access remains a challenge, particularly in rural and conflict-affected areas. The study also highlighted variations in the availability of contraceptive methods across facilities, with significant associations between the provision of certain methods (such as IUDs and oral contraceptives) and higher RHS utilization rates.

These findings provide insights into the complex interplay between health facility characteristics and RHS utilization in South Sudan. The high awareness of RH clinics suggests localized efforts or initiatives that have effectively raised awareness in certain areas, despite broader challenges in healthcare infrastructure and communication networks. However, the findings also reveal persistent barriers related to geographic access and the availability of comprehensive reproductive health services. The significant association between the provision of specific contraceptive methods and RHS utilization underscores the critical role of service availability in shaping healthcare-seeking behaviours. Moreover, the unexpected finding regarding proximity challenges conventional wisdom about the influence of physical distance alone on healthcare utilization, suggesting that other contextual factors may play a more substantial role in South Sudan.

These findings align with theoretical frameworks such as the Health Belief Model (HBM) and the Theory of Reasoned Action (TRA), which emphasize the role of perceived benefits, barriers, and subjective norms in shaping health behaviours. The study supports existing literature on the importance of contraceptive availability in promoting RHS utilization, challenging assumptions about the uniform impact of facility type and proximity on healthcare access. By contextualizing these findings within broader theoretical frameworks, the study contributes to understanding the nuanced factors influencing reproductive health behaviours in resource-constrained settings. Moving forward, addressing these barriers through targeted interventions and policy measures is crucial for improving reproductive health outcomes and reducing maternal mortality in South Sudan and similar contexts.

Overall, the study underscores the need for tailored interventions that address both supply-side challenges (such as contraceptive availability) and demand-side barriers (including awareness and geographic access) to enhance RHS utilization. By elucidating these dynamics, policymakers and healthcare providers can develop more effective strategies to improve reproductive health service delivery and promote equitable access to healthcare in South Sudan. Future research should continue to explore the multifaceted determinants of healthcare utilization in diverse settings, advancing our understanding of how health facility characteristics interact with socio-economic and cultural factors to influence reproductive health outcomes.

**Objective 5: To evaluate the influence of the health workforce on the utilization of RHS in selected South Sudan public health facilities.**

The qualitative analysis on the influence of the health workforce on the utilization of reproductive health services (RHS) in South Sudanese public health facilities revealed several critical insights.

Adequate staffing emerged as a pivotal factor affecting RHS utilization, with participants highlighting its impact on service availability, waiting times, and overall patient experience. Despite recognizing the importance of adequate staffing, the study identified significant challenges related to the shortage of qualified healthcare providers, particularly midwives and nurses. This scarcity not only hindered timely access to RHS but also contributed to increased workloads and burnout among existing staff. Moreover, the study underscored the importance of continuous professional development in enhancing healthcare providers' capacity to deliver comprehensive RHS effectively, highlighting ongoing training as a crucial strategy for mitigating skill gaps and improving service quality.

These findings provide a nuanced understanding of the complexities surrounding healthcare workforce dynamics in South Sudan. The identified staffing shortages underscored broader challenges in healthcare delivery, reflecting global concerns over workforce adequacy in resource-constrained settings. The study's focus on professional development also emphasized the role of ongoing training in maintaining service quality and enhancing patient outcomes. Importantly, the findings highlighted the interplay between workforce well-being, patient trust, and service utilization, suggesting that improving working conditions and investing in healthcare provider capacity are essential for advancing reproductive health goals in the region.

The study aligns with theoretical frameworks such as the Health Belief Model (HBM) and Theory of Reasoned Action (TRA) by illustrating how organizational factors like staffing levels and professional development influence healthcare provider behaviours and, consequently, RHS utilization. These frameworks emphasize the importance of perceived barriers, benefits, and subjective norms in shaping health-related behaviours, reinforcing the study's findings on the

impact of workforce dynamics on reproductive health outcomes. Moreover, the study's findings challenge existing assumptions about healthcare workforce challenges in low-resource settings and underscore the need for tailored interventions to address these issues effectively. By contextualizing these findings within broader theoretical perspectives, the study contributes to a deeper understanding of healthcare workforce dynamics and their implications for reproductive health service delivery.

In conclusion, the qualitative analysis of the health workforce in South Sudanese public health facilities provides critical insights into the challenges and opportunities related to RHS utilization. The findings underscore the importance of addressing staffing shortages, enhancing professional development opportunities, and improving working conditions to strengthen healthcare delivery and improve reproductive health outcomes. Moving forward, policymakers and healthcare stakeholders can use these insights to develop targeted interventions that support healthcare providers, enhance service availability, and ultimately promote equitable access to reproductive health services in resource-constrained settings. Future research should continue to explore these dynamics across diverse contexts to inform evidence-based strategies for enhancing healthcare workforce capacity and improving reproductive health outcomes globally.

### **5.3 Conclusions**

In conclusion, the comprehensive analysis of reproductive health service (RHS) utilization in South Sudan's public health facilities highlights significant challenges and opportunities for improving healthcare delivery in the region. The study revealed a substantial gap between the availability of RHS and effective utilization, with a striking 86.3% of women reporting unmet needs despite seeking services. This discrepancy underscores systemic barriers such as inadequate

funding, infrastructure limitations, and socio-cultural norms that hinder women from accessing essential reproductive health care. The seasonal variations observed in service utilization further emphasize the impact of environmental factors on healthcare access, particularly during the rainy season when logistical challenges escalate.

Addressing these challenges requires a multifaceted approach that includes policy reforms, increased healthcare investment, and targeted interventions to enhance service delivery and overcome socio-cultural barriers. The findings underscore the critical role of improving healthcare infrastructure resilience to weather-related disruptions and expanding community awareness to promote informed health-seeking behaviors. Moreover, investing in healthcare workforce capacity and professional development emerged as pivotal strategies to enhance service quality and meet the diverse reproductive health needs of South Sudanese women effectively.

Moving forward, policymakers and healthcare stakeholders must prioritize evidence-based interventions that address both supply-side constraints and demand-side barriers to RHS utilization. By integrating insights from theoretical frameworks such as the Health Belief Model and Theory of Reasoned Action, which highlight the influence of perceived barriers and social norms on health behaviours, interventions can be tailored to foster positive health-seeking behaviours and improve reproductive health outcomes. Ultimately, by advancing these efforts, South Sudan can make significant strides towards achieving equitable access to comprehensive reproductive health services and improving overall public health in the country.

## 5.4 Recommendations

These recommendations aim to address key challenges identified in each objective and promote actionable strategies to improve reproductive health outcomes in South Sudan.

1. Implement a comprehensive needs assessment to identify specific gaps in reproductive health service delivery and accessibility, ensuring that services align closely with community needs and preferences. This assessment should prioritize addressing systemic barriers such as inadequate funding, infrastructure limitations, and socio-cultural norms that hinder women from accessing essential reproductive health services.
2. Develop and implement climate-resilient healthcare strategies that mitigate the impact of seasonal weather variations on reproductive health service delivery. This includes establishing mobile health clinics, improving infrastructure resilience, and enhancing emergency preparedness protocols to ensure consistent access to reproductive health services during extreme weather conditions.
3. Strengthen community engagement and health education programs that promote accurate information about reproductive health services, particularly targeting underserved populations. Focus on enhancing awareness and dispelling myths through culturally sensitive communication strategies led by trusted community figures and healthcare providers.
4. Improve geographic accessibility to reproductive health services by strategically locating clinics and facilities in underserved areas, particularly rural and conflict-affected regions. Enhance public health information dissemination efforts to increase awareness of nearby

facilities and available services, thereby reducing barriers related to physical distance and facility awareness.

5. Invest in comprehensive workforce development programs that address staffing shortages, enhance professional competencies, and improve working conditions for healthcare providers. Prioritize ongoing training initiatives that empower providers to deliver high-quality reproductive health services effectively, thereby fostering patient trust and increasing utilization rates.

### **5.5 Suggestion for Further Research**

Further research in South Sudan should focus on understanding and addressing barriers to reproductive health service utilization through in-depth qualitative studies, longitudinal research, health system assessments, and community-based participatory research. Qualitative studies can uncover socio-cultural and economic factors influencing healthcare access, while longitudinal research can track trends and seasonal variations in service utilization. Assessing the healthcare system's capacity to deliver comprehensive services and involving communities in designing interventions ensures culturally appropriate and sustainable solutions. Additionally, evaluating the impact of existing policies will provide insights for refining and developing effective strategies to improve reproductive health outcomes in the country.

## REFERENCES

Ajike, S. (2016). Adolescent/youth utilization of reproductive health services: knowledge still a barrier. *J Fam Med Health Care*, 2(3), 17.

Akinyi, O. (2014). Determinants of utilization of youth-friendly reproductive health services among school and college youth In Thika West District, Kiambu County Kenya. *Afr J Reprod Health*, 11(3), 99–110.

Asian-Pacific Resource & Research Centre for Women. (2014). Identifying Opportunities for Action on Climate Change and Sexual and Reproductive Health and Rights in Bangladesh, Indonesia, and the Philippines. [http://arrow.org.my/wp-content/uploads/2015/04/Climate-Change-and-SRHR-Scoping-Study\\_Working-Paper\\_2014.pdf](http://arrow.org.my/wp-content/uploads/2015/04/Climate-Change-and-SRHR-Scoping-Study_Working-Paper_2014.pdf)

Atuyambe, L. M., Kibira, S. P. S., Bukonya, J., Muhumuza, C., Apolot, R. R., & Mulogo, E. (2015). Understanding sexual and reproductive health needs of adolescents: Evidence from a formative evaluation in Wakiso district, Uganda. *Reproductive Health*, 12(1), 1–10. <https://doi.org/10.1186/s12978-015-0026-7>

Ayehu, A., Kassaw, T., & Hailu, G. (2016). Young people's parental discussion about sexual and reproductive health issues and its associated factors in Awabel woreda, Northwest Ethiopia. *Reprod Health*.

Behrman, J. A., & Weitzman, A. (2016). Effects of the 2010 Haiti Earthquake on Women's Reproductive Health. *Studies in Family Planning*, 47(1), 1–15.

Belaid, L., Bayo, P., Kamau, L., Nakimuli, E., Omoro, E., Lobar, R., Samson, B., & Dimiti, A. (2020). Health policy mapping and system gaps impeding the implementation of reproductive, maternal, neonatal, child, and adolescent health programs in South Sudan: a scoping review. *Conflict and Health*, 14(20), 1–16.

Benjamin, G. C. (2016). Shelter in the Storm: Health Care Systems and Climate Change. *Milbank Quarterly*, 94(1), 18–22. <https://doi.org/10.1111/1468-0009.12174>

Binu, W., Marama, T., Gerbaba, M., & Sinaga, M. (2018). Sexual and reproductive health services utilization and associated factors among secondary school students in Nekemte town, Ethiopia. *Reprod Health*, 15(1), 1–19.

Boerma, T., Requejo, J., Victora, C., Amouzou, A., George, A., & Agyepong, I. (2018). Countdown to 2030: tracking progress towards universal coverage for reproductive, maternal, newborn, and child health. *Lancet Elsevier*, 391, 1538–48.

Brown, M. (2015). Climate change, global food security, and the US food system. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6009846/pdf/nihms959299.pdf>

Castro, J. R. (2020). Personal Communication.

Center for Reproductive Rights. (2021). Reproductive Health in Asia: The State of Contraception, Abortion, Child Marriage, Adolescent Pregnancy, and Maternal Mortality in Asia. <https://reproductiverights.org/reproductive-health-asia/>

Cometto, G., Fritsche, G., & Sondorp, E. (2010). Health sector recovery in early postconflict environments: experience from southern Sudan. *Disasters*, 34(4), 885–909.

Corbetta, P. (2003). *Social Research Theory Methods and Techniques*. London: SAGE Publications.

Daniel, W. (1999). *Biostatistics: a foundation for analysis in the health sciences* (7th ed.). John Wiley & Sons.

Downie, R. (2012). The state of public health in South Sudan. In: *Critical Condition*. Center for Strategic and International Studies.

Erismann, S., Gürler, S., Wieland, V., Prytherch, H., Künzli, N., & Utzinger, J. (2019). Addressing fragility through community-based health programmes: insights from two qualitative case study evaluations in South Sudan and Haiti. *Health Res Policy Syst.*, 17(20), 1–16.

Geary, R., Gómez-Olivé, F., Kahn, K., Tollman, S., & Norris, S. (2014). Barriers to and facilitators of the provision of a youth-friendly health services programme in rural South Africa. *BMC Health Serv Res.*, 14(1), 1–8.

Glanz, K., Rimer, B. K., & Viswanath, K. (2015). Theory of reasoned action, theory of planned behavior, and the integrated behavioral model. In K. Glanz, B. K. Rimer, & K. Viswanath (Eds.), *Health behavior: theory, research, and practice* (5th ed.).

Godia, P., Olenja, J., Hofman, J., & Van Den Broek, N. (2014). Young people's perception of sexual and reproductive health services in Kenya. *BMC Health Serv Res*, 14(1), 1–13.

Grace, K., Davenport, F., Hanson, H., Funk, C., & Shukla, S. (2015). Linking climate change and health outcomes: Examining the relationship between temperature, precipitation, and birth weight in Africa. *Global Environ Change*, 35, 125–137.

Grace, K. (2017). Considering climate in studies of fertility and reproductive health in poor countries. *Nat Clim Chang*, 7, 479–485. <https://doi.org/10.1038/nclimate3318>

Green, C. E., Murphy, E. M., & Gryboski, K. (2020). The Health Belief Model. In K. Sweeny, M. L. Robbins, & L. M. Cohen (Eds.), *Wiley & Sons*.

Guttmacher Institute. (2017). Fact Sheet: Abortion in Asia. [https://www.guttmacher.org/sites/default/files/factsheet/ib\\_aww-asia\\_0.pdf](https://www.guttmacher.org/sites/default/files/factsheet/ib_aww-asia_0.pdf)

Hallum-Montes, R., Middleton, D., Schlanger, K., Romero, L., & H., P. (2016). Barriers and facilitators to health center implementation of evidence-based clinical practices in adolescent reproductive health services. *Journal of Adolescent Health, 58*(3), 276–283.

<https://doi.org/10.1016/j.jadohealth.2015.11.002>

Helamo, D., Kusheta, S., Bancha, B., Habtu, Y., & Yohannes, S. (2017). Utilization and factors affecting adolescents and youth-friendly reproductive health services among secondary school students. *Int J Public Health Saf, 2*(4), 1–7.

Hertel, T. (2016). Food security under climate change. *Nature Climate Change, 6*, 10–13.

Hogan, D., Stevens, G., Hosseinpoor, A., & Boerma, T. (2018). Monitoring universal health coverage within the sustainable development goals: development and baseline data for an index of essential health services. *Lancet Glob Heal Elsevier, 6*, e152–68.

Hosseinpoor, A., Williams, J., Itani, L., & Chatterji, S. (2012). Socioeconomic inequality in domains of health: results from the World Health Surveys. *BMC Public Health BioMed Central, 12*(198).

Integrity. (2018). Evaluation of the South Sudan health pooled fund.

IPC. (2018). Integrated food security phase classification, The Republic of South Sudan: Key findings.

Kane, S., Kok, M., Rial, M., Matere, A., Dieleman, M., & Broerse, J. E. (2016). Social norms and family planning decisions in South Sudan. *BMC Public Health, 16*(1), 1–12.

<https://doi.org/10.1186/s12889-016-3839-6>

Kane, S., Rial, M., Matere, A., Dieleman, M., & Broerse, J. E. (2016). Gender relations and women's reproductive health in South Sudan. *Global Health Action, 9*(1), 1–11.

<https://doi.org/10.3402/gha.v9.33047>

Kenya National Bureau of Statistics (KNBS). (2010). *Kenya Demographic and Health Survey 2008–09*. Calverton, Maryland: KNBS and ICF Macro.

<http://www.measuredhs.com/pubs/pdf/FR229/FR229.pdf>

Lee, J. (2016). Sexual and reproductive health in humanitarian contexts: a systematic review of approaches to gender-based violence. *Reproductive Health Matters, 24*(47), 59–71.

<https://doi.org/10.1016/j.rhm.2016.05.002>

Mason, L., Nyothach, E., Alexander, K. T., Odhiambo, F. O., Eleveld, A., Vulule, J., Rheingans, R., Laserson, K. F., Mohammed, A., & Phillips-Howard, P. A. (2013). 'We Keep it Secret so no one should know' - A qualitative study to explore young schoolgirls attitudes and experiences with menstruation in rural western Kenya. *PLOS ONE, 8*(11), e79132.

<https://doi.org/10.1371/journal.pone.0079132>

Mason, N., Pillai, P., & Wilson, S. (2013). National Adolescent Sexual and Reproductive Health Policy, Kampala, Uganda: Ministry of Health.

Mayai, A. T., & Tiitmamer, N. (2018). Climate Change, Population Dynamics, and Conflict: Vulnerability and Adaptation in South Sudan. *Juba, The Sudd Institute*.

McMichael, C. (2015). Climate change and fertility. *BMJ*, 351, h4180.

Ministry of Health Kenya. (2015). National Adolescent Sexual and Reproductive Health Policy 2015. <http://www.health.go.ke/wp-content/uploads/2016/04/ARHPolicy2015.pdf>

Ministry of Health. (2016). South Sudan Health Policy Framework 2016-2025.

Ministry of Health Uganda. (2011). Adolescent Health Policy Guidelines and Service Standards.

Morris, K., & Rushwan, H. (2015). Adolescent sexual and reproductive health: The global challenges. *Int J Gynecol Obstet.*, 131(S1), S40-S42. <https://doi.org/10.1016/j.ijgo.2015.02.006>

Murphy, E., & Carr, D. (2007). Powerful Partners: Adolescent Girls' Education and Delayed Childbearing. *Population Reference Bureau*. <https://www.prb.org/resources/powerful-partners-adolescent-girls-education-and-delayed-childbearing/>

Murphy, E. (2003). *Being Born Female Is Dangerous for Your Health*. Washington, DC: Population Reference Bureau.

National Bureau of Statistics. (2010). The Sudan household health survey 2010. <http://ghdx.healthdata.org/record/sudan-household-health-survey-2010>

Pooe, M. (2016). Management and Implementation of Youth Friendly HIV and SRHR Programmes within Youth Zones of Football Clubs: The Footballers 4 Life (F4L) Model. *Front Public Health*, 4, 96. <https://doi.org/10.3389/fpubh.2016.00096>

Population Reference Bureau. (2012). The World's Youth 2013 Data Sheet. Washington, DC: PRB. <https://www.prb.org/wp-content/uploads/2013/01/youth-data-sheet-2013.pdf>

Reproductive Health Directorate. (2014). National Adolescent Health and Development Strategy 2015-2020. <http://www.familyplanning2020.org/sites/default/files/National%20Adolescent%20Health%20and%20Development%20Strategy%20%202015%20-%202020.pdf>

Roberts, B., Murphy, A., Chikovani, I., & Wickramage, K. (2014). Evaluation of reproductive health services in eastern Burma: The plight of internally displaced populations. *Asian Journal of Research in Social Sciences and Humanities*, 4(8), 69-82.

- Rokicki, S., & Fink, G. (2017). Assessing the Reach and Effectiveness of mHealth: Evidence from a Reproductive Health Program for Adolescent Girls in Ghana. *BMJ Global Health*, 2(4), e000580. <https://doi.org/10.1136/bmjgh-2017-000580>
- Rosenstock, I. M. (1974). Historical Origins of the Health Belief Model. *Health Education Monographs*, 2(4), 328–335. <https://doi.org/10.1177/109019817400200403>
- Rosenstock, I. M., Strecher, V. J., & Becker, M. H. (1988). Social learning theory and the health belief model. *Health Education Quarterly*, 15(2), 175–183. <https://doi.org/10.1177/109019818801500203>
- Sabherwal, S. (2022). Climate change and mental health: A review of the existing literature. *International Journal of Climate Change Strategies and Management*. <https://doi.org/10.1108/IJCCSM-07-2021-0071>
- Save the Children. (2021). Global Childhood Report 2021. <https://resourcecentre.savethechildren.net/document/global-childhood-report-2021/>
- Sekhon, M., Cartwright, M., & Francis, J. (2017). Acceptability of healthcare interventions: An overview of reviews and development of a theoretical framework. *BMC Health Services Research*, 17(88), 1-13. <https://doi.org/10.1186/s12913-017-2031-8>
- Sperl, J. (2010). Health service delivery in post-conflict states: considerations for South Sudan. *Health and Fragile States Network*.
- Srivastava, A., Zaidi, Z., & Stinnett, S. (2011). Reproductive health in conflict zones: the case of Israel and Palestine. *Reproductive Health Matters*, 19(38), 128–136. [https://doi.org/10.1016/S0968-8080\(11\)38595-5](https://doi.org/10.1016/S0968-8080(11)38595-5)
- South Sudan National Bureau of Statistics (SSNBS). (2010). The Sudan Household Health Survey, 2010. <http://ghdx.healthdata.org/record/sudan-household-health-survey-2010>
- Sperling, G. B., & Winthrop, R. (2015). *What Works in Girls' Education: Evidence for the World's Best Investment*. Washington, DC: Brookings Institution Press.
- Stark, L., Asghar, K., Seff, I., Yu, G., Gessesse, T. T., Ward, L., ... & Falb, K. L. (2018). Preventing violence against refugee adolescent girls: findings from a cluster randomised controlled trial in Ethiopia. *BMJ Global Health*, 3(5), e000825. <https://doi.org/10.1136/bmjgh-2018-000825>
- The World Bank. (2018). *Women, Business and the Law 2018*. Washington, DC: The World Bank. <https://doi.org/10.1596/978-1-4648-1252-1>
- Turner, C. (2013). The silent epidemic: The impact of reproductive health on adolescent girls. *International Journal of Gynecology & Obstetrics*, 123(1), 10-13. <https://doi.org/10.1016/j.ijgo.2013.09.003>

- United Nations. (2018). The Sustainable Development Goals Report 2018. <https://unstats.un.org/sdgs/files/report/2018/TheSustainableDevelopmentGoalsReport2018-EN.pdf>
- United Nations Educational, Scientific and Cultural Organization (UNESCO). (2015). Comprehensive Sexuality Education: The challenges and opportunities in Uganda. <http://unesdoc.unesco.org/images/0023/002332/233265e.pdf>
- United Nations Fund for Population Activities (UNFPA). (2014). Adolescent Sexual and Reproductive Health Toolkit for Humanitarian Settings. New York: UNFPA. <https://www.unfpa.org/resources/adolescent-sexual-and-reproductive-health-toolkit-humanitarian-settings>
- United Nations Fund for Population Activities (UNFPA). (2015). Girlhood, not motherhood: Preventing adolescent pregnancy. New York: UNFPA. [https://www.unfpa.org/sites/default/files/pub-pdf/Girlhood\\_not\\_motherhood\\_final\\_web.pdf](https://www.unfpa.org/sites/default/files/pub-pdf/Girlhood_not_motherhood_final_web.pdf)
- United Nations International Children's Emergency Fund (UNICEF). (2019). The State of the World's Children 2019. New York: UNICEF. <https://www.unicef.org/reports/state-of-worlds-children-2019>
- United Nations Population Fund (UNFPA). (2018). World Population Dashboard. New York: UNFPA. <https://www.unfpa.org/data/world-population-dashboard>
- Vaitla, B., Devereux, S., & Swan, S. H. (2009). Seasonal hunger: a neglected problem with proven solutions. *PLoS Med*, 6(6), e1000101. <https://doi.org/10.1371/journal.pmed.1000101>
- Warren, C. E., Toure, L., Mongi, P., & Mafuta, E. (2013). Postabortion care services for adolescent girls: a multi-country assessment in sub-Saharan Africa. *International Journal of Gynecology & Obstetrics*, 123(1), 28-32. <https://doi.org/10.1016/j.ijgo.2013.07.004>
- World Health Organization (WHO). (2012). Early marriages, adolescent and young pregnancies. [https://www.who.int/reproductivehealth/publications/maternal\\_perinatal\\_health/rhr\\_12\\_14/en/](https://www.who.int/reproductivehealth/publications/maternal_perinatal_health/rhr_12_14/en/)
- World Health Organization (WHO). (2016). Global Strategy for Women's, Children's and Adolescents' Health (2016-2030). <https://www.who.int/life-course/partners/global-strategy/global-strategy-2016-2030/en/>
- World Health Organization (WHO). (2018). World health statistics 2018: monitoring health for the SDGs. <https://www.who.int/docs/default-source/gho-documents/world-health-statistics-reports/worldhealthstatistics2018.pdf>
- World Health Organization (WHO). (2019). Adolescent pregnancy. <https://www.who.int/news-room/fact-sheets/detail/adolescent-pregnancy>

World Health Organization (WHO). (2019). Progress on the health-related SDGs.  
[https://www.who.int/gho/publications/world\\_health\\_statistics/2019/en/](https://www.who.int/gho/publications/world_health_statistics/2019/en/)

Zhou, H., Zhang, L., Ye, F., Zhao, Q., Liang, H., & Zeng, H. (2015). The acceptance of mHealth interventions for self-management among rural residents: A structural equation modeling approach. *International Journal of Medical Informatics*, 84(9), 513-523.  
<https://doi.org/10.1016/j.ijmedinf.2015.04.007>



## APPENDICES

### Appendix I: Informed Consent Form

#### Written Consent Form

**Name of the Researcher:** Emmanuel Timothy Thwol Onak

**Research Topic:** Determinants of Uptake and Utilization of Reproductive Health Services Among Women of Reproductive Age in South Sudan's Public Health Facilities

#### Invitation to Participate in the Study

You are invited to be a part of this study because you are an adult and have lived in this State for the past six months, and able to provide the information required in this study.

#### *Introduction and aim of the study:*

Hello! My name is Emmanuel Timothy Thwol Onak, currently pursuing post graduate studies in Doctorate of Philosophy (PhD) in Public Health at the Mount Kenya University. I am conducting a study to examine the determinants of uptake and utilization of reproductive health services in South Sudan's public health facilities.

#### *Research description:*

The aim of the study is to assess the determinants of uptake and utilization of Reproductive Health Services at public health facilities in South Sudan. Study will utilize a mixed-methods approach to collect and analysed data. The first part will be a longitudinal ecological study and the second part will be an analytical cross-sectional study. The study will be conducted at South Sudan's public health facilities in 2 purposively selected States i.e., Western Equatoria and Central Equatoria. It will target local community (clients) visiting public health facilities during the study period, and health workers (key informants) dealing with RHS and responsible in implementing RH policy.

#### *Voluntary participation and withdrawal from the research*

The decision to participate in this study is completely voluntary and you have a right to withdraw your participation at any time without repercussions.

#### *Potential benefits*

If you participate, you will not benefit directly from your participation. But your participation may result in improved future reproductive health services and policies in the Republic of South Sudan.

*Potential risk and discomfort:*

You might be uncomfortable responding to some of the sensitive questions, in such a case, you may choose not to respond to a given question.

*Confidentiality and anonymity:*

Information collected will be used for the intended purpose as explained in the introduction and purpose of the study. I will not include any information that would identify you like your name. The questionnaires will be destroyed and audio-recorded data will be deleted immediately after analysis, presentation, and publication of the results.

*Contact Information*

In case you have any queries regarding this study, you can ask me now or anytime during the study. You can also call me at \_\_\_\_\_ or email me at \_\_\_\_\_. You can even contact the faculty advisor, the Dean of School, School of Public Health through jgkariuki@mku.ac.ke. If you have any question on how your information will be kept confidential in this research or if you have been placed at risk, you can contact the Mount Kenya University, Institutional Ethical Review Committee (IERC) office at research@mku.ac.ke.

*Participant statement:*

The purpose of the research, potential benefits, and risks have been clarified by the researcher. I understand, my participation is purely voluntary and I have the right to withdraw my participation at any time. The queries I had concerning this research have been answered by the researcher and I am aware that, all information I provided will be kept confidential. I willingly decide to participate in the research.

Yes

No

*Researcher statement:*

I have clarified the aim of this research to the participant in the language the participant is conversant with.

Participant Signature /Thumbprint

.....

Date .....

Researcher Signature

.....

Date .....

## Appendix II: Structured Questionnaire for the Local Community

This questionnaire seeks to obtain data from clients (women of reproductive age) visiting public health facility on: the level of uptake and utilization of RHS; experience in weather seasonality / season; socio-cultural factors; and health facility characteristics. The information you give will be treated with confidentiality.

<b>Name of the Health Facility/Center:</b>	
<b>Classification of the Health Facility/Center</b> (e.g., PHCU, PHCC, etc.):	
<b>State / Region:</b>	
<b>District:</b>	
<b>Date of Interview (dd/mm/yyyy):</b>	
<b>Respondent Identification Number:</b>	

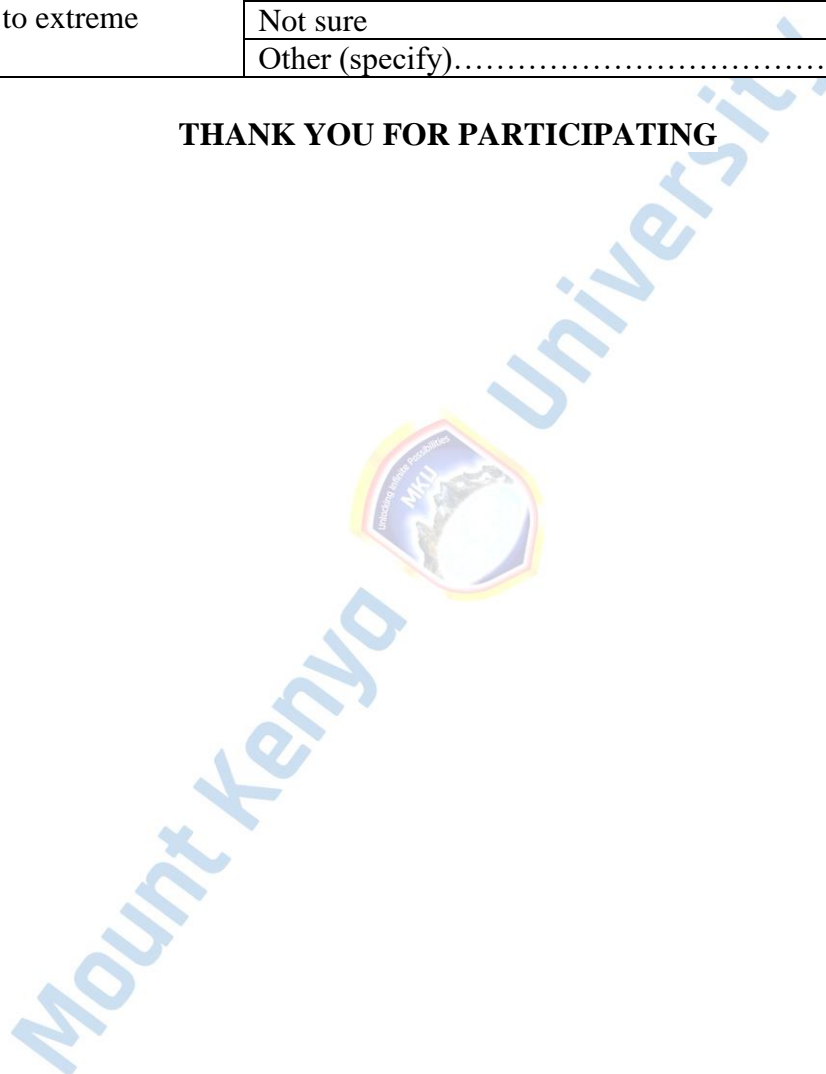
#	QUESTION	RESPONSE/COMMENTS	√/x
<b>SOCIO-CULTURAL CHARACTERISTICS INFORMATION</b>			
1.	Sex	Male	
		Female	
2.	Age		
3.	Marital status	Single	
		Married	
		Divorced	
		Widowed	
		Other (please specify) .....	
4.	Current place of residence	Western Equatoria	
		Central Equatoria	
		Other (please specify) .....	
5.	Do you reside in the urban or rural areas?	Urban	
		Rural	
		Other (please specify) .....	
6.	For how long have you stayed in the current place of residence? ( <i>in months</i> )		
7.	What is your employment (income earning) status?	In school or training	
		Paid/wage/paid-in kind employed	
		Self-employed	
		Unemployed (dependent on support from others)	
		Unemployed but not seeking work for other reasons (example disabilities)	

#	QUESTION	RESPONSE/COMMENTS	√/x
		Other (please specify) .....	
8.	What is your average household earning? (In SDG) (select one response)	< 250,000	
		250,000 to 500,000	
		500,001 to 750,000	
		750,001 to 1,000,000	
		More than 1,000,000	
9.	Religion	Christian	
		Muslim	
		Traditional	
		Other (please specify).....	
10.	Ethnic group (e.g., Dinka, Nuer, Shilluk, etc.)		
11.	Education status (select one response)	No school	
		Only traditional/non-formal school	
		Grade level or number of years in school ____ (enter a number from 1- 12; includes grade completed or dropped-out)	
		Completed College / University	
12.	Please tell me what reproductive health services you have knowledge about? (Do not read. Listen and tick all that apply. Probe: Any others?)	Family planning	
		Prevention and management of STIs	
		Maternal and newborn care	
		Prevention and management of gender-based violence	
		Prevention of unsafe abortion and management of post-abortion care	
		HIV counselling and testing	
		Modern contraceptive services	
		Condom use	
		Routine gynaecological examination (including Pap smear, breast exam, etc.)	
		PMTCT	
		Other (specify) .....	
Unsure / don't know			
13.	What/who was your main source of information on [topic]? (Check all that apply)	Radio	
		Television	
		Magazine / Newspaper	
		Pamphlet	
		Family members	
		Friends/peers	
		Health workers/government officials	
Development agents (e.g., NGO)			
<b>UPTAKE OF REPRODUCTIVE HEALTH SERVICES</b>			
14.	What services have you received in this facility in	Family planning	
		Prevention and management of STIs	

#	QUESTION	RESPONSE/COMMENTS	√/x
	the past 12 months (excluding those provided outside the facility by referral)?  <i>(Do not read. Listen and tick all that apply. Probe: Any others?)</i>	Maternal and newborn care	
		Prevention and management of gender-based violence	
		Prevention of unsafe abortion and management of post-abortion care	
		HIV counselling and testing	
		Modern contraceptive services	
		Condom use	
		Routine gynaecological examination (including Pap smear, breast exam, etc.)	
		PMTCT	
		Other (specify) .....	
		Unsure / don't know	
15.	Did you get all of the RHS you wanted?	Yes	
		No	
		Not sure	
		Other (specify).....	
16.	Awareness of free access to public health facility providing RHS	Yes	
		No	
		Not sure	
		Other (specify).....	
<b>HEALTH FACILITY CHARACTERISTICS</b>			
17.	Awareness of the nearest RH clinic	Yes	
		No	
		Not sure	
		Other (specify).....	
18.	If yes to question 17, what is the distance to the nearest RHS center from your household?		
19.	Please tell me what services are provided in the RHS center? <i>(Do not read. Listen and tick all that apply. Probe: Any others?)</i>	Intrauterine device	
		Oral contraceptives	
		Condoms (male and female)	
		Injectables	
		Emergency contraceptive pills	
		Spermicidal agents	
		Prevention and management of STIs	
		Maternal and newborn care	
		Prevention and management of GBV	
		Prevention of unsafe abortion and management of post-abortion care	
		HIV counselling and testing	
		Other (specify) .....	

#	QUESTION	RESPONSE/COMMENTS	√/x
<b>WEATHER SEASONALITY/SEASON</b>			
20.	Have you experienced any extreme weather event(s) in the past 12 months? (e.g., drought, floods)	Yes	
		No	
		Not sure	
		Other (specify).....	
21.	If yes, have you been constrained to access RHS center due to extreme weather	Yes	
		No	
		Not sure	
		Other (specify).....	

**THANK YOU FOR PARTICIPATING**



### Appendix III: Interview Guide for Key Informants

This interview guide seeks to obtain data on the level of uptake and utilization of RHS; the relationship between changes in weather season and utilization of RHS; socio-cultural factors influencing uptake and utilization of RHS; the influence of health facility characteristics on uptake and utilization of RHS; and influence of health workforce on uptake and utilization of RHS. The information you give will be treated with confidentiality.

<b>Name of the Health Facility/Center:</b>	
<b>Classification of the Health Facility/Center</b> (e.g., PHCU, PHCC, etc.):	
<b>State / Region:</b>	
<b>District:</b>	
<b>Date of Interview (dd/mm/yyyy):</b>	
<b>Name/Designation:</b>	

1. *What is your take on the level of uptake and utilization of RHS in the health facility? How do women of reproductive age utilize these services?*
2. *Would you say that women of reproductive age are taking up or making use of RHS? What type of RHS are provided?*
3. *What is your take on extreme weather events in Western Equatoria and Central Equatoria States?*
4. *What do you think about the impact of drought and flooding on the uptake of RHS in the health facility? Would you say there is a relationship between changes in weather season and utilization of RHS among women of reproductive age?*
5. *How does socio-cultural factors influence uptake and utilization of RHS? How does the following factors influence utilization i.e., sex, age, marital status, residence, wealth index, religion, ethnic group, and education level?*
6. *Are the clients (local community) visiting the health facility knowledgeable about RHS? What types of services are available?*
7. *What other RHS that are not available/provided in the health facility, would you like clients to get?*
8. *Who are responsible for providing RHS in the health service? Are the services adequate?*
9. *Are there adequate and/or qualified personnel that provide RHS in the health facility?*
10. *Would you say that public health clinics/hospitals reach out to local community to use RHS? Why do some clients fail to receive some of the RHS they want?*
11. *What is your take on RHS accessibility among women of reproductive age? Are the public health facilities providing these services located where they are easily accessible?*
12. *How are public health centers/facilities structured and classified? Is the hospital classification helpful in terms of utilizing RHS among women of reproductive age?*
13. *What is your take on modern contraceptive services? What type of modern contraceptives are available in the facilities?*

14. *Does the health facility get additional revenue resources on RHS? Has the facility received any funding from NGOs/donors in the past 12 months? Do you depend on out-of-pocket revenue from clients in the financial year?*
15. *How does health workforce influence uptake and utilization of RHS in the health facility? How does these health workforce factors influence uptake: level of education, cadre or academic qualification, workload, and salary?*

**Thank you for participating**



## Appendix IV: Focus Group Discussion Guide

<b>Date:</b>	<b>FG:</b>
<b>District:</b>	<b>Interviewer:</b>
<b>Village:</b>	<b>Recorder:</b>
<b>No. of Participants:</b>	<b>Site of FGD:</b>

*Pass out a sheet of paper to gather information on: Participant name, age, gender level of education, participant signature*

(Before we begin, kindly; introduce yourself.... tell us about yourself (5 minutes of ice breaker))

- 1. Would you say that women of reproductive age are taking up or making use of RHS in the public health facility?*
- 2. What do you think about the impact of drought and flooding on the uptake of RHS in the health facility?*
- 3. How does socio-cultural factors influence uptake and utilization of RHS?*
- 4. Are the women of reproductive age visiting public health facility knowledgeable about RHS? What types of services are available?*
- 5. Who are responsible for providing RHS in the health service? What is your take on the services being adequate?*
- 6. Are there adequate and/or qualified personnel that provide RHS in the health facility?*
- 7. What is your take on RHS accessibility among women of reproductive age? Are the public health facilities providing these services located where they are easily accessible?*
- 8. Is the hospital classification helpful in terms of providing RHS among women of reproductive age?*
- 9. What is your take on modern contraceptive services? What type of modern contraceptives are available in the public health facilities?*
- 10. Does public health facility get additional revenue resources on RHS? Has the facility received any funding from NGOs/donors in the past 12 months?*
- 11. How does health workforce influence uptake and utilization of RHS in the health facility?*

**Thank you for participating**

## Appendix V: Dataset and Variables Used in the Analysis (Data Abstraction Tool)

### Descriptive Information

The proposed intervention focuses on reproductive health services in South Sudan, targeting individuals, families, groups, and the general public. The intervention includes the delivery of comprehensive reproductive health services such as family planning, antenatal care, HIV testing and counseling, and maternal and newborn care. Trained healthcare professionals, including doctors, nurses, and midwives, deliver the services in public health facilities. The intervention involves ongoing professional development for healthcare providers to ensure advanced skills and knowledge. The target population learns about the intervention through community outreach, awareness campaigns, and educational programs. The intervention's timeframe, frequency, and duration are designed to provide continuous access to reproductive health services. The scope of the intervention extends to reach a broad segment of the population in South Sudan. Coordination with other agencies and organizations, as well as collaboration with the target community, enhances the intervention's effectiveness. The target population encompasses women of reproductive age, aiming to improve the delivery and utilization of reproductive health services across diverse settings in South Sudan.

### Family Planning Visits

YEAR	FAMILY PLANNING	
	Central Equatoria	Western Equatoria
2015Q1	477	367
2015Q3	242	131
2016Q1	580	460
2016Q3	155	145
2017Q1	601	586
2017Q3	345	233
2018Q1	990	800
2018Q3	311	255
2019Q1	971	845
2019Q3	401	367
2020Q1	901	845
2020Q3	416	333

### HIV Counselling and Testing

YEAR	HIV Counselling & Testing	
	Central Equatoria	Western Equatoria
2015Q1	428	345
2015Q3	211	145
2016Q1	500	468
2016Q3	110	132
2017Q1	544	586

2017Q3	245	298
2018Q1	920	892
2018Q3	349	270
2019Q1	1,005	841
2019Q3	567	375
2020Q1	920	900
2020Q3	416	421

### Maternal and Newborn Care

YEAR	Maternal & Newborn Care	
	Central Equatoria	Western Equatoria
2015Q1	411	332
2015Q3	210	112
2016Q1	400	429
2016Q3	101	102
2017Q1	510	511
2017Q3	201	243
2018Q1	840	829
2018Q3	320	220
2019Q1	920	787
2019Q3	512	321
2020Q1	820	820
2020Q3	376	321

### Climate in Central Equatoria and Western Equatoria South Sudan

MONTHS	CENTRAL EQUATORIA		WESTERN EQUATORIA	
	Sunshine hours per day	Rain days per month	Sunshine hours per day	Rain days per month
January	7.9	1.67	6.2	0.13
February	7.2	1.90	6.9	0.22
March	6.6	5.39	5.9	2.00
April	6.1	10.40	5.8	5.63
May	6.4	11.30	6.4	9.86
June	5.5	10.56	5.9	11.86
July	5.6	10.33	5.2	10.86
August	6.2	14.56	5.6	16.4
September	6.9	12.67	6.3	14.57
October	7.1	10.78	6.8	9.22
November	7.1	6.89	7.8	2.56
December	7.3	2.89	8.2	0.29

**Appendix VI: Name of Facilities Represented by States**

<b>NO</b>	<b>CENTRAL EQUATORIA</b>	<b>NO</b>	<b>WESTERN EQUATORIA</b>
1.	Belpham Medical Hq	1.	Akpa PHCU
2.	Buko PHCU	2.	Gagura PHCC
3.	Gurulotogu PHCU	3.	Ibba PHCC
4.	Jombu PHCU	4.	Lui Hospital
5.	Juba Teaching Hospital	5.	Maltesar Hospital
6.	Kajokeji Civil Hospital	6.	Maridi County Hospital
7.	Kuda H/C	7.	Maruko PHCU
8.	Liggi PHCU	8.	N.H.I Yambio H Centre
9.	Luri Jebel PHCU	9.	Nabanga PHCC
10.	Molusuk PHCU	10.	PHCC Gangura
11.	Mongolla PHCC	11.	Source-Yubu Hospital
12.	New Site Clinic PHCC	12.	State Hospital
13.	Nyikabur PHCU	13.	Tambura Civil Hospital
14.	Ombasi PHCC	14.	Yambio PHCC
15.	Pirisa PHCU	15.	Yangiri PHCC
16.	Rokon PHCC		
17.	Sermon PHCU		
18.	Tijor PHCU		
19.	Toko-Kotulu PHCU		
20.	Tukoro PHCU		
21.	Yei Civil Hospital		

*Source: Ministry of Health, South Sudan (2023)*

## Appendix VII: Approval MKU ERC Certificate



REF: MKU/ISERC/2492

Date: 23 November 2022

TO: EMMANUEL TIMOTHY THWOL ONAK

REG: PHDPH/2020/68781

Dear Sir/Madam,

**RE: DETERMINANTS OF UPTAKE AND UTILIZATION OF REPRODUCTIVE HEALTH SERVICES AMONG WOMEN OF REPRODUCTIVE AGE IN SOUTH SUDAN'S PUBLIC HEALTH FACILITIES**

This is to inform you that **Mount Kenya University** has reviewed and approved your above research proposal. Your application approval number is **1565**. The approval period is **10/11/2022 - 09/11/2023**.

This approval is subject to compliance with the following requirements;

- i. Only approved documents including informed consents, study instruments, MTA will be used
- ii. All changes including amendments, deviations and violations are submitted for review and approval by **Mount Kenya University**
- iii. Death and life threatening problems and serious adverse events or unexpected adverse events whether related or unrelated to the study must be reported to **Mount Kenya University** within 72 hours of notification
- iv. Any changes, anticipated or otherwise that may increase the risks or affect the safety or welfare of study participants and others or affect the integrity of the research must be reported to **Mount Kenya University** within 72 hours
- v. Clearance for export of biological specimens must be obtained from relevant institutions
- vi. Submission of a request for renewal of approval at least 60 days prior to expiry of the approval period. Attach a comprehensive progress report to support the renewal
- vii. Submission of an executive summary report within 90 days upon completion of the study to **Mount Kenya University**

Prior to commencing your study, you will be expected to comply with any additional requirements from the relevant authorities in the country where this study will be conducted

Yours sincerely,  
The Chairman  
Mount Kenya University  
Ethics Review Committee  
P.O. Box 342 - 0100, Thika

Dr. Peter G. Kirira  
Chairman, Mount Kenya University ISERC

**Appendix VIII: Ministry of Health (Republic of South Sudan) Approval Letter**

**REPUBLIC OF SOUTH SUDAN**



Ministry of Health, Research Ethics Review Board (MOH-RERB), Juba.

Date: 20<sup>th</sup> December, 2022

MOH/RERB Protocol No.65/5/12/2022- MOH/RERB: 62/2022

**Principal Investigator:** Emmanuel Timothy Thwol Onak. Mount Kenya University,

**Supervisor(s):** Dr. Alfred Owino Odongo(PhD) & Dr. John Kariuki (PhD), Mount Kenya University,

Research Approval Letter

**Project: “Determinants of Uptake and Utilization of Reproductive Health Services Among Women of Reproductive Age in South Sudan’s Public Health Facilities”**

**Dear Emmanuel,**

The Ministry of Health Research Ethics Review Board at its 9<sup>th</sup> meeting held on 19<sup>th</sup> December 2022 reviewed your research proposal and has given a favorable ethical opinion for implementation.

The approval was based on the quality of your application form, protocol and supporting documents that complied with the conditions and principles established by International and national guidelines for carrying out research involving humans as research participants. This approval shall be valid until 20<sup>th</sup>/08/2023.

In this regard, you are expected to commence implementation of this research. Please note that the annual report and the request for renewal, should be submitted to the MOH-RERB one month before the expiry of the approval time. The progress report should not exceed five pages.

In addition, any serious problem related to implementation of this research protocol should be promptly reported to the MOH-RERB, and any changes to the protocol should not be implemented without the MOH-RERB approval except in instances where such a change is necessary to eliminate or prevent an immediate hazard to the research participants. However, kindly note that no findings shall be published or disseminated without approval from MOH-RERB hereto.

I wish you all the best in implementing this research protocol across the selected health facilities.

**Amanya Jacob Kasio Iboyi, MPH/SMU**

#. Deputy Director for Research-MOH, Juba & Deputy Chairperson MOH-RERB/Juba/RSS

#. Cc: Director General, Policy Planning/Budgeting & Research, MOH-Juba

# Cc: DG/S MOH WES, CES, EES, JS, US, WBGS, LS, Warrap, & Hospital Directors, CHD/HFs

## Appendix IX: Research Proposal MKU Certificate of Corrections

MKU/PG/F011

SCHOOL LEVEL

**Mount Kenya**  **University**

SCHOOL OF POSTGRADUATE STUDIES

**MKU/PG/F011: RESEARCH PROPOSAL CERTIFICATE OF CORRECTIONS**

*(NB: This Research Proposal Certificate of corrections should be submitted to the Dean, School of Postgraduate Studies for clearance before the Student proceeds to collect data)*

**PART I: CANDIDATE PARTICULARS**

Name of candidate Mr. EMMANUEL TIMOTHY THWOL ONAK

Registration No: PHDPH/2020/68781

Department of study: SCHOOL OF PUBLIC HEALTH

Cell phone No: +211911444429 - +211922444429

School: SCHOOL OF PUBLIC HEALTH

Degree Title: DOCTOR OF PHILOSOPHY (PHD) IN PUBLIC HEALTH

Area of specialization: PUBLIC HEALTH, REPRODUCTIVE HEALTH

Title of Thesis: DETERMINANTS OF UPTAKE AND UTILIZATION OF REPRODUCTIVE HEALTH SERVICES AMONG WOMEN OF REPRODUCTIVE AGE IN SOUTH SUDAN'S PUBLIC HEALTH FACILITIES.

Date of Meeting/Examination: Scheduled for 28<sup>th</sup> September 2022 and it was successfully concluded .

Signature of candidate:  . Date: 15<sup>th</sup> October 2022

**PART II: DECLARATION OF SUPERVISOR(S) OVERSEEING CORRECTION / REVISION**

I/We, the undersigned supervisor(s) overseeing corrections of the research proposal as advised by the candidate's evaluation panel do hereby declare that all the corrections have been effected satisfactorily as required.

Any other remarks .....  .....

**Names of Supervisors**

**Signature**

**Date**

1. Dr. Alfred Owino Odongo (PhD)



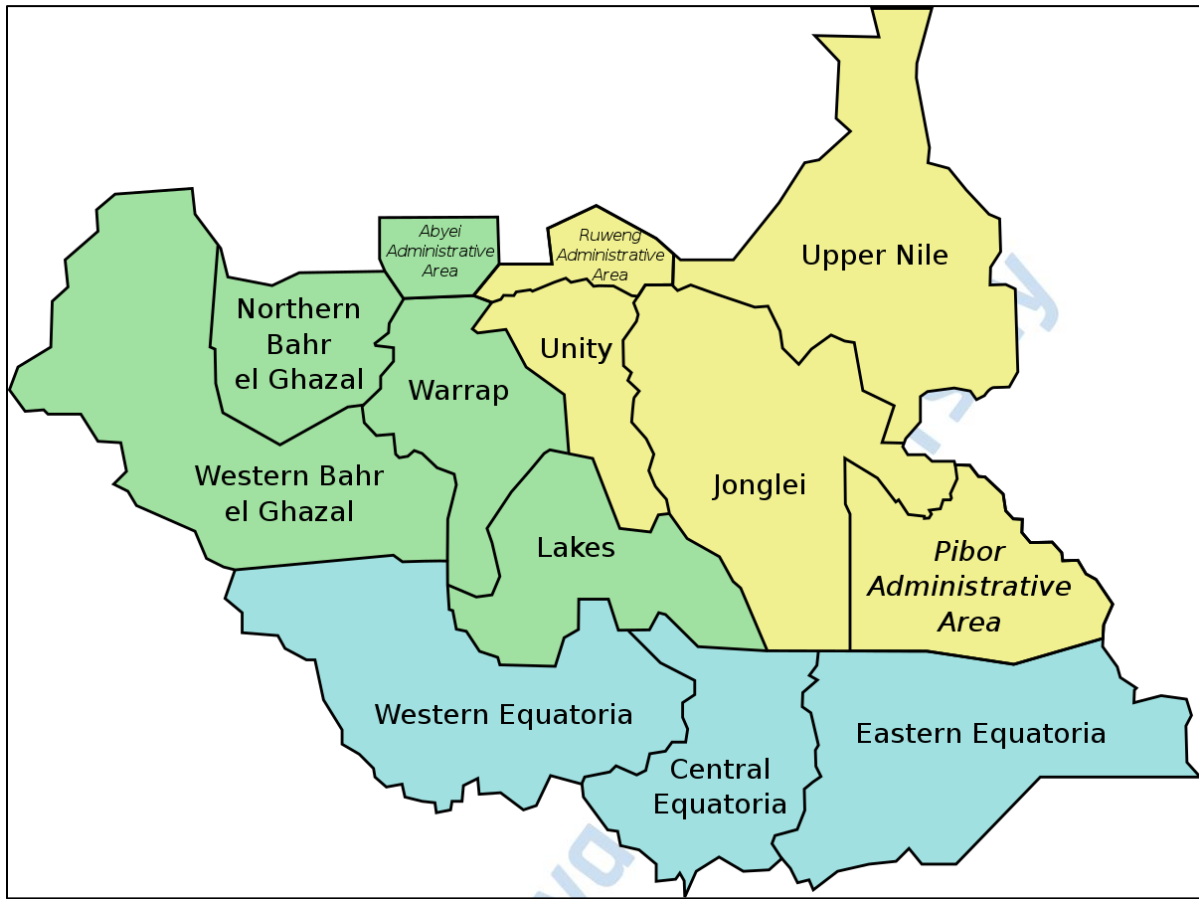
21/10/22

2. Dr. John Kariuki (PhD)



21/10/22

**Appendix X: Map of Research Sites (Central Equatoria and Western Equatoria States)**



# Appendix XI: Similarity Index Report (16%)

Untitled document

A RESEARCH THESIS SUBMITTED TO THE SCHOOL OF PUBLIC HEALTH  
IN PARTIAL FULFILMENT OF THE REQUIREMENT FOR THE AWARD OF  
DOCTOR OF PHILOSOPHY (PHD) IN PUBLIC HEALTH OF  
MOUNT KENYA UNIVERSITY

© OCTOBER 2023

## ABSTRACT

Despite comprising only about one-tenth of the global population in Africa, the region accounts for a disproportionate 20 per cent of worldwide births and nearly half of all maternal deaths during pregnancy and childbirth. Poor reproductive health is a significant contributor to the global disease burden, particularly affecting women of reproductive age. This dire situation is partly attributed to limited access to essential reproductive health interventions. For example, contraceptive use among married women in Sub-Saharan Africa is notably low at 13 per cent.

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