

**DETERMINANTS OF BREASTFEEDING PRACTICES AND
INTERVENTIONS TO PROMOTE GOOD
BREASTFEEDING PRACTICES IN SOUTH SUDAN.**

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South Sudan

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DETERMINANTS OF BREASTFEEDING PRACTICES AND INTERVENTIONS TO PROMOTE GOOD BREASTFEEDING PRACTICES IN SOUTH SUDAN.

A thesis submitted in partial fulfilment of the requirement for the degree of

Master of Science in Public Health

by

Loguran Anthony.

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List of Abbreviations

Term	Definition
ANC	Antenatal Care
BFHI	Baby Friendly Hospital Initiatives.
BHT	Boma Health Team
BMS	Breast Milk Substitutes.
CMAM	Community Management of Acute Malnutrition.
EBF	Exclusive Breastfeeding
GDP	Gross Domestic Product.
HIV	Human Immune Virus
HPF	Health Pooled Fund
IDP	Internally Displaced People.
IYCF	Infant and Young Child Feeding
LMIC	Lower- and Middle-Income Countries
M&E	Monitoring and Evaluation.
MIYCN	Maternal, Infant, and Young Child Nutrition
MOH	Ministry of Health.
NGOs	Non-Governmental Organizations
PLF	Prelacteal Feeding.
PNC	Postnatal Care
UNICEF	United Nations International Children's Emergency Fund.
WBTi	World Breastfeeding Trends Initiative.
WFP	World Food program
WHA	World Health Assembly.
WHO	World Health Organization.

Glossary

Antenatal care (ANC): Antenatal is the pregnancy period from conception to birth (1). Antenatal care refers to the healthcare given to pregnant women throughout their pregnancy, from conception to delivery (2).

Breastfeeding counselling: is a process in which a trained professional interacts with pregnant mothers with an aim of helping them make informed choices about breastfeeding practices while ensuring confidentiality and respect for the woman's situation (1).

Breast Milk Substitutes (BMS): Any food or milk product that is advertised as a partial or complete substitute for breast milk (3).

Colostrum: is the milk produced in the initial days after delivery (4).

Continued breastfeeding: refers to breastfeeding for at least 2 years and beyond (5)

Early initiation of breastfeeding: It is the act of putting the newborn on the mother's breasts to start breastfeeding within one hour after birth and ensuring the provision of colostrum and skin-to-skin care (6).

Exclusive breastfeeding (EBF): it is the absolute feeding of infants under six months with breastmilk. This is to ensure that no liquids or other food are given to the infant at this period except for medications including minerals and vitamin supplements (7).

Formula Milk: Artificial highly processed infant products created from a range of ingredients such as animal milks, vegetable oils and soybeans. These are marketed as part of a product range that covers infant formula, products for toddlers and growing-up, and might also include specialized medical formula products (3).

Infant: A child who is aged 0 to 12 months (8).

Marketing: refers to promotion, selling and distribution of commodities (products) to users through providers (3).

Postnatal care (PNC): is the healthcare provided to mothers and their newborns from delivery up to 6 weeks after birth (9).

Prelacteal feed (PLF): Artificial feeds or drinks given to an infant before breastfeeding is established (8).

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Dedication

I dedicate this work to all the mothers around the world who devote their time to raising children through breastfeeding. Often, the efforts of women to breastfeed go unnoticed as they strive to find a balance between their daily responsibilities and nursing their infants.

Abstract

Introduction.

The World Health Organization (WHO) recommends breastfeeding practices such as early initiation of breastfeeding within one hour after birth; EBF for six months and continued breastfeeding for two years and beyond to prevent childhood morbidities and mortalities. However, breastfeeding practices remain inadequate in South Sudan. The study explored the determinants of breastfeeding practices and interventions to promote good breastfeeding practices in South Sudan.

Methodology

In this study Literature review and Key informant interviews were done. Literature was extracted through searching Google Scholar, PubMed, VU Library and Ministry of Health (MOH) and Health Partners' websites. Snowballing technique was also used. Key informants' interviews were conducted based on the participants' expertise and responsibilities from MOH, Health facility and Health Partners. A total of 4 interviews were conducted.

Results

The study found support from family and community as a facilitator to breastfeeding. However multiple factors hindered breastfeeding practices in South Sudan including lack of knowledge of good breastfeeding practices, misconceptions, insufficient breastfeeding counselling and support, inadequate breastfeeding guidelines and programmes, and lacking workplace policies, deficient legislation and monitoring, and inadequate financing.

Conclusion and recommendations.

Families and communities play a key role in promoting breastfeeding. Breastfeeding interventions should aim at increasing advocacy efforts at family and community levels, and strengthening systems and policies. Actions should prioritize investments in guidelines, training, adopting the marketing code, improving workplace conditions, and monitoring of breastfeeding practices. Future research is essential to explore, workplace conditions, financing, getting pregnant while breastfeeding and infant growth.

Keywords: Breastfeeding, breastfeeding practices, breastfeeding determinants, breastfeeding interventions, South Sudan.

Word count: 12,556.

Introduction.

Breastfeeding provides infants with the best nutrition for healthy development and growth (10), (11). This is because breast milk contains substances that promote the function of the immune, nervous, and gastrointestinal systems (12). Universally, accepted good breastfeeding practices entail the early initiation of breastfeeding within one hour after birth to facilitate the production of colostrum (first breastmilk) (4), exclusive breastfeeding for six months, and continued breastfeeding for two years and beyond adequate and safe supplementary foods should be provided to the infant (10). It prevents childhood morbidities and mortality from respiratory infections and diarrhoea preventing the deaths of about 820,000 children under the age of five. It also prevents long-term conditions such as diabetes and obesity; increases the intelligence level of children worldwide (13), (14), (15). Currently, South Sudan's infant mortality is 64/1000 live births (16) which is higher than the global target 6.4/1000 live births (17).

Breastfeeding became uncommon in Lower and Middle-Income Countries (LMIC) especially among wealthier, well-educated, and urban women where they perceived breastmilk substitutes as modern and prestigious (18) resulting from the increasing marketing of formula milk (3). Good breastfeeding practice can be challenging even in high income countries and much more in low-income country like South Sudan (15), (6), (18) because lack of breastfeeding support and financial investment (19).

In South Sudan, 63.4% of new-borns are initiated on early breastfeeding and 62.3 % of infants are fed on breastmilk absolutely up to six months and 68% continued breastfeeding (20) which are below the global targets (21), (22). In 2018, the Global Breastfeeding Scorecard set goals for breastfeeding to be achieved by 2030; increasing initiation of early infant's breastfeeding and exclusive breastfeeding to 70%, and continuation of breastfeeding up to 2 years (80%) (23). Despite the recommended targets, breastfeeding rates still remain low (18), (15), notable in South Sudan that has experienced waves of instability (24) (25) which resulted in fragmentation of the health system and limited access to health services where pregnant and lactating mothers could receive breastfeeding information, counselling and support (26)

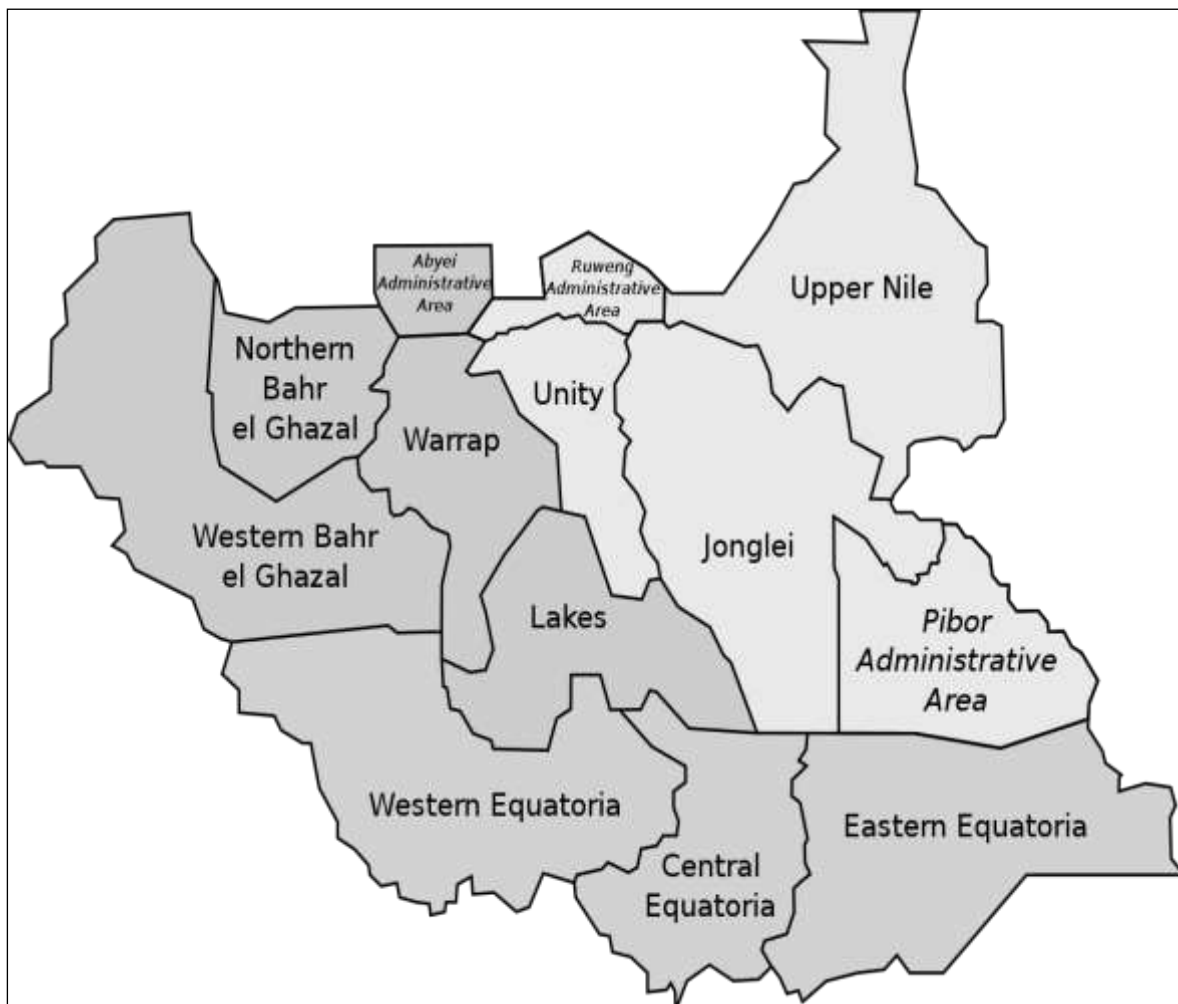
Chapter 1: Background information of South Sudan

This section discusses the administrative features, demographics, political situation, Socioeconomic, ethnicity, and culture and the health system of South Sudan.

1.1 Administration

South Sudan is an East African country that gained independence from Sudan on 9th July 2011. It has a total size of 644,329 square kilometres and boarded by the Democratic Republic of Congo, Uganda, Kenya, Ethiopia, Sudan, and the Central African. Its capital city is Juba located in Central Equatoria State (27). Figure 1 shows the map of South Sudan. South Sudan has a tropical climate characterized by wet and dry seasons (28).

Figure 1: Map of South Sudan showing the ten states and administrative areas.



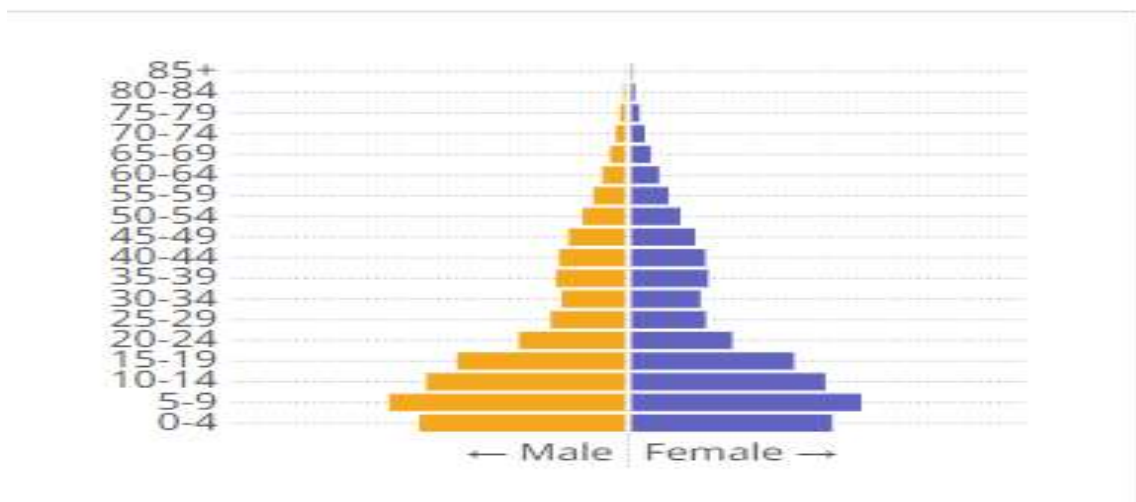
Source: Justin PH and De Vries L, 2019 (29).

1.2 Demographics

South Sudan's population was estimated to be 14.2 million inhabitants in 2023, with 51% being males and 49% being females. Out of the total population, 81% reside in rural areas, and the life expectancy at birth is 50 years. The demographics indicate that 73.7% of the population is under 30 years of age, pointing to a young population (See figure 2) (27).

The total fertility rate (TFR) is 4.5 children per woman, with 158 births per 1000 women occurring among adolescents between 15 and 19 years of age. The projected rate of teenage pregnancy among girls aged 15 to 19 is 30% (27). Additionally, 19% of females aged 15 and above are literate (31).

Figure 2: South Sudan's population pyramid, 2020.



Source: WHO, The Global Health Observatory (32).

The mentioned population figure does not include refugees from other countries. As of April 2023, South Sudan had registered 308,000 refugees from Sudan and the Central African Republic (30).

1.3 Political situation

Since gaining independence from Sudan in 2011, South Sudan has faced political and economic unrest. The country descended into conflict in both 2013 and 2016, resulting in loss of life, population displacement, and economic disruption (33). Over 4 million people were displaced as a result (25). Among them, 2.3 million are externally displaced, while another 2.3 million are internally displaced people (IDPs). Of the IDPs, 44,000 live in Protection of Civilians (PoCs) areas (30). In 2018, the warring parties signed a revitalized peace agreement in an attempt to bring lasting peace to the country (34).

1.4 Socioeconomic, ethnicity, and culture

The major source of income for South Sudan is its oil revenues. The country has a Gross Domestic Product (GDP) of 633 USD per capita (35). However, the economy has been adversely affected by armed conflicts, leading to estimations that 7.8 million people may experience food insecurity (30). South Sudan comprises 64 tribes (36), each with diverse cultures and ethnic groups that share strong family and patriarchal structures and norms (37). The majority of the population practices mixed farming, involving both animal rearing and food crop production (38).

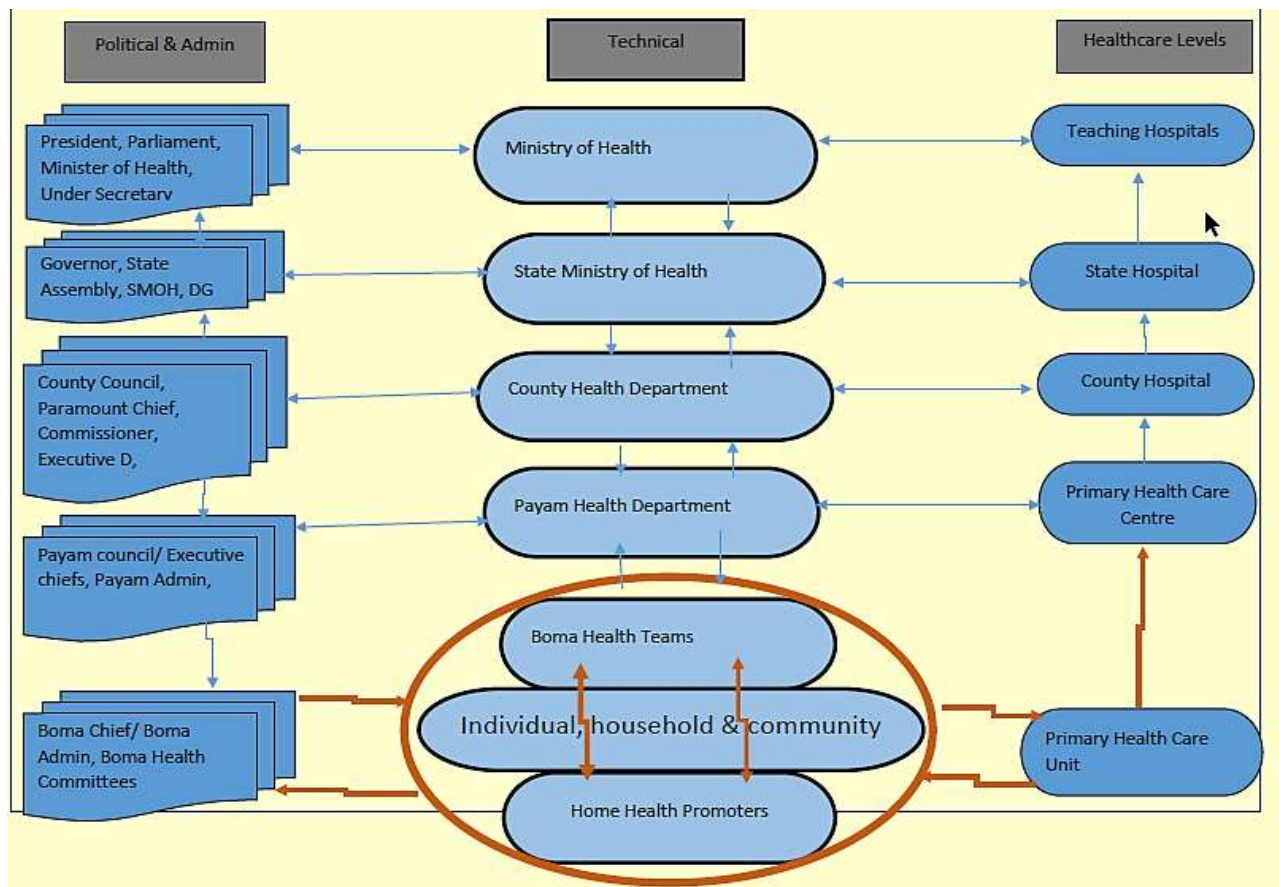
1.5 Health system

South Sudan's Health System follows a hierarchical structure ranging from the National level (National MOH) to State (State MOH), County (County Health Department-CHD), Payam (Payam Health Department), and Boma Health Teams (BHTs) at the Boma level. Stakeholders oversee policy-making and system management responsibilities (39), (40). The health system's structure is illustrated in Figure 2.

Health services in South Sudan are organized into three tiers (40) (41):

1. Primary care is delivered through Boma Health Teams (BHTs), Primary Health Care Units, and Primary Health Care Centres.
2. Secondary care is provided by County and State Hospitals.
3. Tertiary care includes National referral, specialist, and teaching hospitals.

Figure 3: The health system's governance and structure in South Sudan.



Source: Ministry of Health 2015 (39).

Ongoing conflicts have resulted in the destruction of numerous health facilities (33) (40). Presently, South Sudan possesses a total of 1952 health facilities, of which only 984 are operational (40). Notably, many of these functioning health facilities are situated in remote areas (38). Access to healthservices poses a challeng, with 51% of the population residing an hour's walking distance from health facilities (38). In 2017, access to healthcare was only 28% (40).

South Sudan's health system is insufficiently funded receiving only 1% of the country's GDP (35). Out of pocket spending accounts for 23.1% of the expenses and more than 80% of primary healthcare services are provided by Non-Governmental Organizations (NGOs) and faith-based organizations (FBO) (41). Private Health Insurance covers only 5.4% of the population (8).

Chapter 2:

This chapter covers the problem statement, justification, and the objectives of the study.

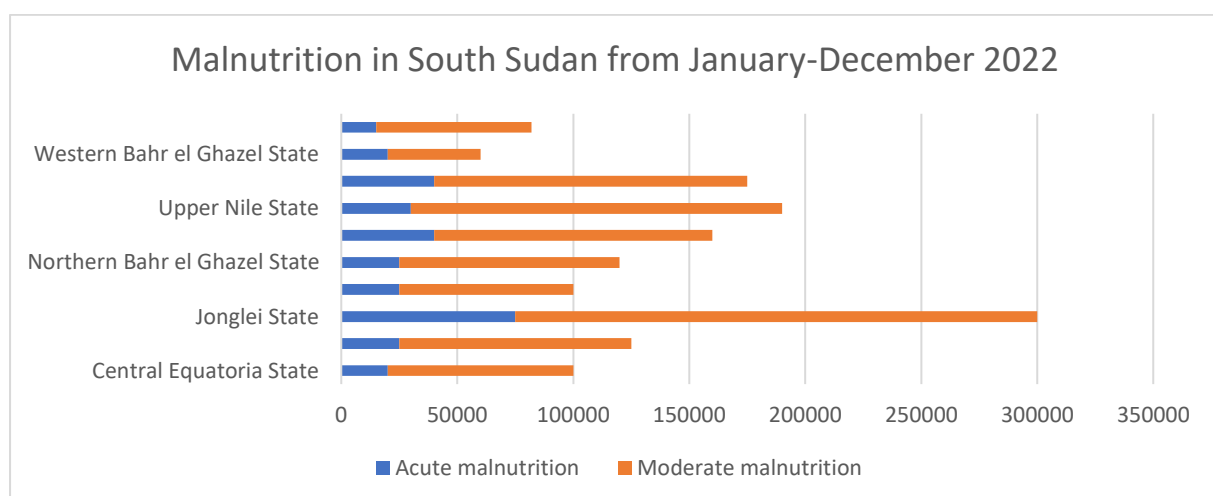
2.1 Problem statement

The World Health Assembly (WHA) recommends strategies that protect, promote and support breastfeeding as key interventions to achieve global target of 70% for early initiation and EBF and 80% for continued breastfeeding (23), (42), (43). However, breastfeeding rates remain low in South Sudan. For instance it is estimated that 1 in 3 children are exclusively breastfed (22). This indicates a significant gap in achieving optimal breastfeeding practices.

Meeting the healthcare needs of mothers and children and enhancing health outcomes remains a major challenge in South Sudan because of the country's underdeveloped health system and poor socioeconomic situation (6) (7). The remoteness of residents, lack of health facilities and lack of trained health workers makes it worse to access needed health services (27) (40).

The rate of infant mortality is striking in South Sudan in which 75 % of deaths are caused by preventable cause such as pneumonia, neonatal sepsis and diarrhoea (44). Good breastfeeding practices can prevent up to 13% of the mortalities arising from these causes (45). Infant mortality is a major concern and priority area for improvement by the MOH. Additionally, it is estimated that about 300,000 infants will suffer from acute malnutrition in South Sudan with the highest rates seen in Jonglei state (see figure 3) (22). Malnutrition is significantly linked to poor exclusive breastfeeding practices and it is one of the causes of infant mortality in the country (46), (47).

Figure 4: Graph showing acute malnutrition in 2022.



Source: Adopted from IPC Food Security & Nutrition Snapshot (46)

Furthermore, majority of the mothers practice complimentary feeding with water, formula milk and cow's milk within 6 months after birth (48) interrupting the recommended exclusive breastfeeding practice. This is problematic because non-exclusive breastfeeding lowers the immunological functions of breastmilk leading to vulnerability to infection (11). Evidence shows that infants who are complementarily fed with other foods (water, milk and solid foods) before 6 months have fourfold greater risk of dying from infection (49) (50).

2.2 Justification

There are few studies on breast feeding practices among South Sudanese women. Two studies were conducted at Juba Teaching Hospital on the factors associated with delayed initiation of breastfeeding (21) and prevalence of prelacteal feeding which show lack of breastfeeding counselling at the facility and communities (48). Another study was conducted among South Sudanese women in Adjumani Refugee camp (Uganda) which indicated that women were knowledgeable about breastfeeding although barriers such as socioeconomic factors, perceived weaning period at 3 months and perceived pain were documented (24).

There is no documented information whether breastfeeding policies and interventions are available in South Sudan. Breastfeeding policies and programmes can promote maternal breastfeeding practices (5) as well as ensuring adherence to guidelines by health workers (14).

The studies show lack of breastfeeding counselling in the facilities and communities as a major concern in improving breastfeeding practices in the country (21) (48). Evidence shows that, ANC and PNC counselling by doctors and midwives promotes the initiation and continuation of infant breastfeeding (11).

The mothers' knowledge and awareness about the importance of breastfeeding was reported to be good in the study conducted in Juba Referral Hospital. The study recommended further household survey to gain a comprehensive understanding about breastfeeding practices in South Sudan because it was conducted in an urban setting and could not be generalized to the general population (51). In 2022, United Nations International Children's Emergency Fund (UNICEF) called for collaborative efforts to increase mothers' knowledge and awareness about the benefits of breast feeding in South Sudan (22).

Despite the few studies conducted on breastfeeding in South Sudan, no study has focused on the determinants of breastfeeding practices and interventions to promote good breastfeeding practices in South Sudan making it crucial to conduct this study.

2.3 Overall objective

To explore the determinants of breastfeeding practices and interventions of good breastfeeding practices in South Sudan and generate recommendations to inform policymakers to use evidence-based strategies, and programmes that are culturally appropriate to improve infants' breastfeeding.

2.3.1 Specific objectives

1. To explore the individual factors of breastfeeding among South Sudanese women in South Sudan.
2. To explore the sociocultural, and environmental factors (market context and workplace, family, and community settings) affecting breastfeeding practices among South Sudanese women in South Sudan.
3. To examine the health systems determinants affecting breastfeeding practices in South Sudan.
4. To analyse interventions that promote good breastfeeding practices globally and similar context to South Sudan.
5. To generate recommendations for policy makers to use evidence-based strategies, and programmes to improve infant breastfeeding in South Sudan.

Chapter 3: Methodology

This chapter describes the methods used for this research. The study used two approaches; Literature review as the primary study method and Key informant interviews to supplement the findings gathered online. The methods are described below.

3.1 Literature review

A literature review was explored to extract articles from electronic search engines and databases such as Google, PubMed, Google Scholar, and VU Library for relevant studies on facilitators and barriers to breastfeeding practices in South Sudan. Also, the MOH, WHO, UNICEF, and other Health partners' websites were searched for relevant reports and policies related to breastfeeding practices and programs in South Sudan.

In combination of the Boolean operators (AND, OR), the search terms “Breastfeeding OR Lactation OR breastfeeding practices OR nursing infants” in combination with “family”, “community”, “health system”, “sociocultural”, “market”, “individual factors”, “workplace/employment”, “breastfeeding counselling”, “breastfeeding support” and “lactation management” AND “South Sudan”, were used. See (annex 1).

In addition, regional and global studies about breastfeeding practices, policies, and interventions were also used to compare the success of breastfeeding interventions. Peer-reviewed and grey literature including reports written in English were included in the review. Thesis on breastfeeding practices were excluded. Also, a snowball technique was explored to retrieve relevant literature included on the reference lists of articles and documents used. The search was no limited to studies published from the year 2011-2023 when South Sudan gained independence. However, a few publications from 2000 and on were included from other countries.

Even though several sources were explored to acquire the literature on the topic, there were limited materials accessible to research on the factors that influence breastfeeding practices among South Sudanese women in South Sudan. Therefore, I included studies on breastfeeding practices from East African countries (Uganda, Ethiopia, Tanzania, Kenya, and Sudan) and few Sub-Saharan African countries to supplement the research.

The determinants and interventions of breastfeeding practices are arranged according to Rollin's NC et al, 2016 framework of enabling environment of breastfeeding and are viewed

in two parts: “determinants” and “interventions”. The determinants and interventions will discuss concepts related to the objectives of the study.

Table 1: Selection Criteria.

Selection Criteria	Standard.
Study type	Literature Review of Peer-reviewed articles and grey literature including reports were included in the study.
Languages	English as being the official language of South Sudan.
Settings	South Sudan primarily. However, due to limited studies about breastfeeding in South Sudan, literature from East African countries and few Sub-Saharan Africa were extracted and used.
Publishing date	2011-2023 as per the country’s independence (2011). However, a few studies were included from 2000 and on from other countries.
Outcomes	Breastfeeding practices (Early initiation, exclusive breastfeeding, and continued breastfeeding).

3.2 Key Informants’ Interviews

3.2.1 Design and setting

The Key informant interviews is a qualitative approach which was selected to supplement the information obtained through the literature review. It focuses on the knowledge and expertise of key informants selected to provide an in depth understanding of the health system, policy factors and interventions around breastfeeding practices in South Sudan.

3.2.2 Selection criteria and sampling technique

Key informants were selected based on their professional capacity of working and participating in the interventions and the policies on maternal and child health.

A purposive sampling approach was employed to identify individuals who held key positions at the National Ministry of Health, Health facilities and Health Partners such as WHO, UNICEF, Health Pooled Fund (HPF).

3.2.3 Recruitment of Key informants

Key informants were contacted through email explaining the purpose of the research and inviting them to participate in the interviews. A total of 4 key informants were recruited for this study.

3.2.4 Data collection tool

A Semi-structured tool was developed based on Rollins NC et al, 2016 framework of enabling environment of breastfeeding. The components of the intervention in the framework focusing on health systems interventions (policies, legislation, and monitoring, counselling, support, and lactation management) were selected to supplement the information obtained through literature review. The questions were split into 3 domains with focus on 1. Policymakers at the MOH, 2. Health Workers, 3. Health Partners. Each domain was allocated 4 questions.

3.2.5 Data collection process

Online interviews were through Zoom and Teams meetings in a responsive style at the participants' preferred spaces. The interview script was limited to 12 questions and each interview lasted about 30 minutes. All interviews were conducted through video conference and audio-recorded with the participant's consent. Probing was done on specific topics of interest, allowing for a more comprehensive understanding of the participants' opinions. The interviews were conducted between June and July 2023.

3.2.6 Data analysis

The audio recordings were transcribed and then codes were created according to the topic guide (Annex 2) and then grouped into sub themes. The coding was performed manually on a word document and excel sheet using a deductive approach based on the themes on the topic guide. The transcripts were cross checked 3 times to ensure accuracy. Data was then analysed, and statements were generated representing the core opinions of the key informants for each sub theme.

3.2.7 Quality assurance

Voluntary participation and confidentiality were assured. Participants were given the opportunity to ask questions for clarity. The participants were assured that their responses and identities would remain anonymous, and the data would be used only for research purposes. Refer to annex 4 for the consent form.

3.2.8 Ethical considerations

A waiver was obtained from KIT ethical committee for the Key informant interviews. This is because there was no sensitive or personal information collected. The interviews were based on professional capacity and experiences. An informed consent was provided to the participants to sign prior to the interviews and confidentiality was observed.

3.3 The framework

I used the Rollins NC et al. 2016, framework of enabling environment for breastfeeding as a reference to analyse and organize the determinants of breastfeeding practices and the interventions to promote good breastfeeding practices in South Sudan. The model has been employed in various studies across different countries including Sub-Saharan Africa (52) (53) (54). Furthermore, it has served as a guide for the design of breastfeeding policies and interventions to address the challenges of breastfeeding by UNICEF and WHO (52).

As shown in figure 4, the framework shows various factors (**determinants**) such as structural (sociocultural and market), settings: health system, family and community, workplace and employment, individual domains: mother and infant attributes and relationships that influence breastfeeding practices (8) (18) and multiple **interventions** at different levels that are used in promoting, protecting, and supporting good breastfeeding practices (18).

According to Rollins NC and colleagues, the ‘determinants’ interplay at different levels in influencing breastfeeding practices. At structural level, sociocultural attitudes towards breastfeeding can shape the woman’s experiences of breastfeeding; market factors such as exposure to breast milk substitutes persuades mothers to prefer infant formula to breastfeeding. At settings level, health system level, access to health services, breastfeeding support and experienced healthcare workers affect breastfeeding outcomes; Family and community levels conceptualize how emotional support and assistance provided to lactating mothers by relatives and community members contribute to positive experience of breastfeeding; workplace support such as maternity leave, breastfeeding breaks and spaces provide opportunity for breastfeeding. At Individual level, the mother’s attributes such as knowledge of breastfeeding and health problems and infant’s attributes play a role in breastfeeding practices (18).

The ‘interventions’ provide crucial measures to address the determinants at different levels: individual, family, community, healthcare system, workplace, and societal and market levels. For example, breastfeeding mothers can be encouraged to breastfeed through provision of

information, education, and support at individual level along with support from family and community levels, integrating breastfeeding counselling and support into the health system and creating policies, and legislations and financial investment to execute policies and programs to promote breastfeeding. To ensure adherence to the legislations, governments need to enforce law by pushing those who violate it (18).

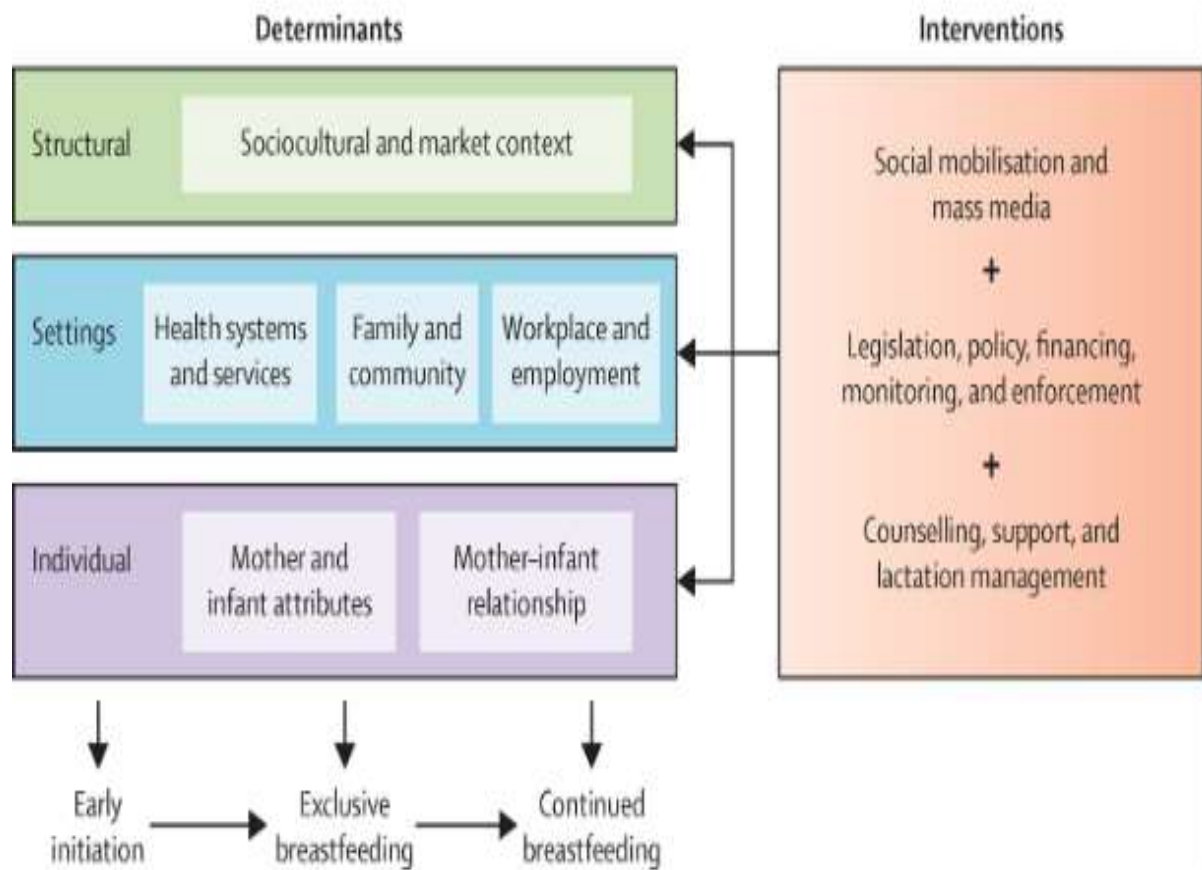
While the Rollins NC and colleagues' framework offers multiple levels of factors that interplay at different levels, in this study, I opted to use the framework differently in presenting the results to align with the study objectives. My reasoning for this alternative arrangement is based on the specific objectives of the study and after examining the factors, I believe that some of the factors could be grouped together into different headings to fit the study goal.

I classified the '**determinants**' into 4 categories: (1). Individual factors (Mother and infant attributes and Mother and infant relationship), (2). Sociocultural determinants (breastfeeding norms, mixed feeding norms, Human Immune Virus (HIV) and stigma of exclusive breastfeeding) (3). Environmental determinants (family and community setting, work and employment and market factors), (4). Health systems determinants.

The second component, '**interventions,**' is grouped into three categories: (1) Advocacy (including social mobilization and mass media), (2) Policies, legislation, financing, and monitoring, and (3) Health systems interventions (such as counselling, support, and lactation management). The enforcement component is discussed within the context of legislation since it does not stand independently.

The findings of the study are presented in two chapters: **Chapter 4** discusses the determinants of breastfeeding at different levels; **Chapter 5** discusses the various interventions used to address the determinants at different levels.

Figure 5: Framework for the enabling environment of breastfeeding practices. Source: Rollins NC et al, 2016 (18).



Chapter 4: Findings: Determinants of breastfeeding

This section describes the various factors that influence breastfeeding practices at different levels, and addresses the first, second and third objectives of the study. The determinants are organized as follows:

- 4.1 Individual factors: Mother and infant attributes and Mother and infant relationship.
- 4.2. Sociocultural determinants: Breastfeeding norms, mixed feeding norms, HIV stigma of exclusive breastfeeding
- 4.3. Environmental determinants: Family and community setting, work and employment and market factors.
- 4.4. Health systems determinants.

4.1 Individual factors

Individual factors entail personal characteristics that influence the decisions or actions of the individual in relation to breastfeeding. It includes maternal factors that affect their relationship with the infant and the infant's factors which influence the breastfeeding habits of the infant (18).

4.1.1 Mother's attributes

Age

Maternal age was associated with EBF in South Sudan. A study in Juba shows that mothers aged 30 years and above were more likely to practice exclusive breastfeeding (51). This study is similar to a studies conducted in Kenya (55) and Sudan (56). However, these studies did not provide the reasons why women at this age group were able to practice EBF.

A systematic review and demographic survey analysis in Sub-Saharan African countries found that older women (20-34 years) of age were more likely to practice EBF compared to younger women (57) (58).

Reasons provided include: The high level of experience in breastfeeding among older women (58) and misconception among women less than 25 years about breastfeeding such as sagging of breasts and perceived pain (57).

Parity (number of children)

The number of children was found to have an influence on EBF. Women with more than one child were more likely to breastfeed exclusively compared to women who had children for the

first time (51) (24). This is because high parity women understand the breastfeeding challenges and know how to manage them compared to first time mothers (59).

Pregnancy

There was no literature found on influence of getting pregnant on breastfeeding while the woman is still breastfeeding in South Sudan. However, a cross sectional study in Sudan revealed that mothers who planned to get pregnant were 1.5 times less likely to use PLF than women who did not plan to get pregnant (56). The reason may be that mothers who planned for their pregnancies have dedicated time to receive breastfeeding counselling and time to breastfeed their babies.

Health problems

The impact of maternal illness on breastfeeding has been highlighted in the context of South Sudanese women. Approximately 4.4% of the mothers stopped breastfeeding due to breast problems (51). The breast problems reported include cracked nipples and engorged breasts (59) (55).

Women believed that the illness might be transmitted through breast milk to their babies and they might also receive advice from relatives to stop breastfeeding (24) (59).

Psychological factors

Psychological barriers to breastfeeding were reported in a study among South Sudanese women in Uganda. The factors reported were marital conflicts and perceived pain (24).

In instance of a marital conflict, women would temporarily leave their homes without the baby. As a result, the spouse had to find an alternative way of feeding the infant. Perceived pain of breastfeeding was reported among young women having first babies because they believed that breastfeeding is a painful practice (24) (59).

Mothers who had mental problems did not practice breastfeeding. Their relatives had to feed the infant with prelacteal foods. The relatives feared that if the mentally ill mother were left alone with the baby for breastfeeding, she might harm the baby (24).

Fear of physical changes that are associated with breastfeeding was not documented among South Sudanese women. However, studies in Sub-Saharan Africa show that some mothers did not practice breastfeeding due to concerns of sagging breasts and thought they would not be attractive to their men after the changes (59) (57).

Knowledge of the importance of breastfeeding

Knowledge and awareness of benefits of breastfeeding was good among South Sudanese women who visited the hospital. A study on Knowledge and awareness of breastfeeding in Alsaba hospital in South Sudan revealed that 85% of mothers were aware of EBF up to 6 months and discussed the perceived importance of EBF (51). The perceived benefits were baby gets nutrition from breastfeeding, promotes bonding, and prevents infants from getting sick (51) and increase baby's intelligence (24).

Although, the level of knowledge and awareness of the benefits of breastfeeding seems good, EBF was not practiced. About 53% of the women practiced PLF (48). Detailed information about prelacteal feeding is covered within the context of health systems and sociocultural determinants. Mothers did not practice expression of breast milk because they did not know its importance. They believed that if the milk was kept in a cup for too long, it might go bad (51).

Women who had attained university level of education were more likely to practise EBF compared to mothers with lower levels of education (51). The reasons could be that women who have attained higher levels of formal education have better access to breastfeeding information, healthcare, and are more likely to adhere to breastfeeding recommendations (58).

4.1.2 Infant's Attributes

Infant Growth

No literature has been found in South Sudan that demonstrates an association between the infant's age and breastfeeding. However, studies conducted in Kenya and Ethiopia that explored the determinants of EBF and knowledge of breastfeeding have shown a significant association between EBF and the infant's age (60) (61)(62). The results revealed a notable reduction in the proportion of EBF as the infant's age increased. Breastfeeding rates decreased from 50 percent during the first month after birth to 30 percent at three months of age (60) (61). This was viewed as a normal practice by the researcher (60).

Infant illness

A study conducted among South Sudanese refugees documented that parents of sick babies held the belief that breastmilk alone was inadequate to support an ill infant and that it might exacerbate the baby's condition. This belief led them to introduce foods other than breast milk

(51). Furthermore, when babies fall ill, they might experience weakness, irritability, and excessive crying, leading them to reject breastfeeding. In efforts to ensure their well-being, mothers often resort to offering prelacteal feeds (57).

4.2 Sociocultural factors

This section examined the social and cultural factors that impact on individual decisions and practices. In this study, the sociocultural factors covered under this section are breastfeeding norms, mixed feeding norms before 6 months after birth and HIV stigma around breastfeeding.

Breastfeeding norms

Research has demonstrated disparities in sociocultural practices and attitudes across communities and countries which negatively influence breastfeeding (63) (64).

Breastfeeding in public is generally not considered a problem and women are often able to breastfeed anywhere without facing stigma or discrimination in South Sudan. The South Sudanese communities and cultures view breastfeeding as a natural and part of caring for an infant's nutritional needs, and a normal aspect of motherhood (65).

A study investigating the factors that contribute to the delay in initiating breastfeeding revealed that the disposing of colostrum was common, and it was associated with a delay in the commencement of breastfeeding and PLF among South Sudanese women (48). Mothers believed that colostrum was unclean and bad for the baby (48) (59). However, disposing of colostrum might not cause delay in initiation of breastfeeding but it could impact on the beneficial effects of breast milk on the baby (48).

Mixed feeding norms before six months

Research among HIV positive mothers in Juba revealed that mixed feeding was commonly practiced before 6 months of age. Some mothers provided water to their babies within three days of birth, and introduced juices, solid foods, and porridge between the ages of three to five months (66).

Mothers reported receiving advice to exclusively breastfeed their infants for only six months from health professionals. This advice prompted them to introduce prelacteal foods and liquids at two to three months, aiming to familiarize the infants with family foods (66).

A systematic review of breastfeeding knowledge, attitudes, and practices in East Africa, including South Sudan, revealed that a significant portion of women held misconceptions about breastfeeding. Many believed that EBF was not sufficient for the infant up to six months, and that breastfed babies were not necessarily healthier than those fed prelacteal foods, and that formula milk was more convenient than breastfeeding. These misconceptions prompted them to introduce foods other than breast milk to their babies (59).

HIV stigma around exclusive feeding

In the study conducted in South Sudan, HIV stigma was not reported (66). However, stigma among HIV-positive mothers has been identified as one of the barriers to optimal breastfeeding practices, as reported in studies conducted in Kenya (67) and South Africa (68). The findings from these studies highlighted a lack of adherence to recommended infant feeding options, including both EBF for six months and supplementary feeding by mothers (67) (68).

HIV-positive mothers cited a misconception as the reason for their poor adherence to recommended practices. They believed that their community might know their HIV status based on their chosen feeding method (67) (68).

4.3 Environmental factors

In this paper, the term 'environmental factors' encompasses the various settings that surround women and can directly influence their breastfeeding practices. As outlined in the methodology above, the section on environmental factors constitutes a subset that includes settings such as the family and community setting, workplace/employment environment, and the market context. This section examines these factors and presents the findings below.

4.3.1 Family and community setting

Breastfeeding practices can differ among family members due to the customs and experiences of female relatives. These practices can also be influenced by the support and attitudes within the family and community (69). Notably, women who receive strong support from their partners tend to breastfeed their babies for longer durations (69) (18).

A qualitative study conducted among South Sudanese refugee women in Uganda unveiled that optimal breastfeeding was facilitated by various forms of support, including that from husbands or fathers, the community, and NGOs. Participants highlighted that community support encompassed assistance from neighbours and family members. This support encompassed aid

with household tasks, the provision of food, assistance with childcare, and verbal encouragement to breastfeed (24)(70).

Mothers perceived this assistance to enhance breast milk production and as a source of joy that contributed to positive breastfeeding experiences (24). This support also provided them the opportunity to devote more time to their infants (70). Nonetheless, a decrease in support from family members due to their increasing busy work schedules was reported (70).

Positive breastfeeding practices were more commonly observed among married women in comparison to unmarried women (47). This discrepancy is attributed to the substantial support that married women receive from their husbands, encompassing assistance with household tasks, childcare responsibilities, and verbal encouragement to breastfeed (71) (70).

4.3.2 Workplace and employment.

Women's engagement at work is a one of leading reasons why mothers choose not to breastfeed or wean infants early. It has several effects such as intensity, fatigue, and practicality (18) (72). Most workplaces lack on-site spaces for breastfeeding, breastfeeding breaks, lack employers' and co-workers' support (73) and maternity leave (74), leading to the decline in the rates of breastfeeding among women in the workforce after returning to work (75).

Work emerged as a significant barrier to breastfeeding for South Sudanese women, particularly for those employed far from home or who had returned to school (24). These women often left their babies with relatives to provide alternative foods for feeding (66). Many of these women faced the pressures of working and providing for their families, as a majority were the primary breadwinners (66)

No literature has been discovered in South Sudan regarding workplace policies, including aspects such as maternity leave, designated break times for breastfeeding, and support from co-workers. However, additional insights were obtained from the Key Informant interviews. All key informants confirmed the presence of maternity leave, with both private and government sectors granting women a three-month maternity leave. Further details about workplace-related policies are discussed under the section of workplace and employment interventions.

4.3.3 Market context

According to WHO, the marketing of BMS poses challenges to breastfeeding in 40 years and beyond. Despite resolutions and adoption of the Code to regulate the marketing of infant formula, the selling continues to be driven by corporate interests and sales rather than the health of newborns and population (3).

Marketing has the power to raise demand for unhealthy foods including formula milk. With the invention and increasing use of digital tools, the advertisement of formula milk is concerning because it often influences and persuades women to buy the different products of formula such as comfort formula, specialized formula for their babies in the expense of breastfeeding (3) (76) (77). Advertisements for infant formula claiming that the addition of substances increases intelligence of the baby could lead some women to believe that breastfeeding is not ideal for their babies (78).

A study conducted by WHO across multiple countries, investigating the impact of infant formula marketing, revealed that in most of these countries, health professionals have recommended the use of formula milk to mothers. This practice has resulted in decreased women's confidence in breastfeeding and has generated doubts about the importance of breastfeeding (3).

The study conducted in South Sudan revealed that mothers who had been exposed to formula product advertisements were more inclined to opt for formula milk when feeding their infants (66). Socio-economic factors such as marital status, education, social stigma, cultural beliefs, cost of infant feeding methods, and income were found to be associated with the choice of feeding methods (79). While most mothers indicated a preference for formula milk over breast milk, the reasons for opting for commercial products were not explicitly specified.

As discussed in the workplace and employment section, researchers suggest that the choice of mixed feeding could be attributed to the economic circumstances of many women, who often served as the primary earners and providers for their families. Consequently, they were compelled to leave their babies with caregivers to feed while they were at work (66). Despite a desire to utilize infant formula, many mothers expressed an inability to afford it due to its high cost (66) (79) especially considering they also have other children to provide for (79).

4.4 Health systems determinants

The health system plays a vital role in the provision of breastfeeding services, encompassing information, counselling, support, and management. This section discusses the various factors within the health system that influence breastfeeding practices in South Sudan. The following areas were explored: health workforce, health services (counselling), separating mother and infant, and the introduction of prelacteal feeds.

Health workforce

South Sudan has a severe shortage of healthcare professionals, which presents serious challenge for health service delivery. The magnitude of the deficit is obvious given the wide disparity between the demand for healthcare services and the available human resources for health. Currently the ratio of health workers to the population is 1.5 doctors and 2 nurses serving 100,000 people which is shockingly lower than the WHO recommended ratio of 180 doctors and 250 nurses per 100,000 population. Various factors contributed to the shortage of healthcare personnel such as the conflict which displaced many people including health workers, a small number of health training institutions, lack of health infrastructure (33).

Furthermore, the internal conflicts that erupted in 2013 and 2016 were characterized by violence against civilians and healthcare workers which compelled many to leave their jobs or migrate for safety (80). As a consequence, numerous communities face challenges when accessing healthcare (33) (38). Based on a study examining the quality of maternal and child health services, the poor quality of care was attributed to unqualified personnel (81). Estimates indicate that one in four women (25%) receive care from qualified personnel when delivering at the health facility (40).

Health services (counselling/advice)

Many health workers lack the necessary knowledge and skills to support and encourage breastfeeding and promote mother and baby skin care. Breastfeeding support and counselling are not often offered or routinely left out when health professionals come in contact with pregnant and lactating mothers (82).

In South Sudan, pregnant mothers who presented for ANC were 2.3 times less likely to receive care from trained personnel and deliver with assistance from skilled provider (83) contributing

to the inadequate breastfeeding counselling and support in the country (48). The other reason could be the lack of breastfeeding programs and initiatives in the country (48) (45).

Additionally, the HIV epidemic has impacted negatively on breastfeeding policies and programs leading to decline in health professionals' confidence and community attitudes (14). According to the study conducted among HIV positive mothers in Juba, mothers reported having received conflicting advice from health professional to stop breastfeeding at 6 months of age due to a belief that mother-to-child transmission of HIV is more likely to occur through breast milk after 6 months (84).

According to the South Sudan National HIV consolidated guidelines, EBF for HIV mothers is recommended for 6 months and continued breastfeeding with introduction of complementary foods for 1 to 2 years (84). Conversely, the study indicated that mothers who attended Prevention of Mother to Child Transmission (PMTCT) services had 2.26 times likelihood of practicing good infant feeding (66).

Separation of mothers and infants

Globally, the mode of delivery determines the mother to infant interaction after birth. A study on the impact of caesarean birth on breastfeeding found that early initiation of breastfeeding after caesarean birth was lower than normal vaginal birth because babies are roomed separately from their mothers (85)

A study in South Sudan found that majority of women (70%) who had normal vaginal birth practiced skin-to-skin care with their babies immediately after birth, 98.1% were roomed together with their babies and 76.8% initiated early breastfeeding (51). Caesarean section was associated with delayed initiation of breastfeeding. Mothers who delivered through caesarean section had a delay in early initiation of breastfeeding within 1 hour (21). This delay may be mediated by factors that directly affect initiation of lactation such as separation of the mother from the infant which prevents babies from suckling (86).

Pre-lacteal feeding

As mentioned under the individual factors, prelacteal feeding was high among South Sudanese women indicating inadequate breastfeeding practices (24) (48) (83). The health systems related factors associated with PLF were, caesarean section, and lack of ANC breastfeeding

counselling. The most common feeds given to infants were glucose solution accounting for 54%, water (26%) and formula (14%) (83). Some women gave cow's milk (24) (83).

The reason of using glucose solution and formula milk was the mother's belief that the baby might be hungry or starving particularly before the establishment of full lactation. Majority of mothers often gave their babies water in misconception that the newborn could be thirsty due to the hot temperature in South Sudan (48). Some women stated that supplementing breastfeeding was necessary since breastmilk alone is insufficient for sick babies (24).

Chapter 5: Findings: Breastfeeding interventions.

This section presents the results on the second part of the framework which conceptualizes the breastfeeding interventions and addresses the fourth objective of this study. The interventions discussed include advocacy, policies and health systems programs and initiatives used to promote breastfeeding.

5.1. Advocacy: Social mobilization and mass media

5.2. Policies, Legislation, monitoring and financing.

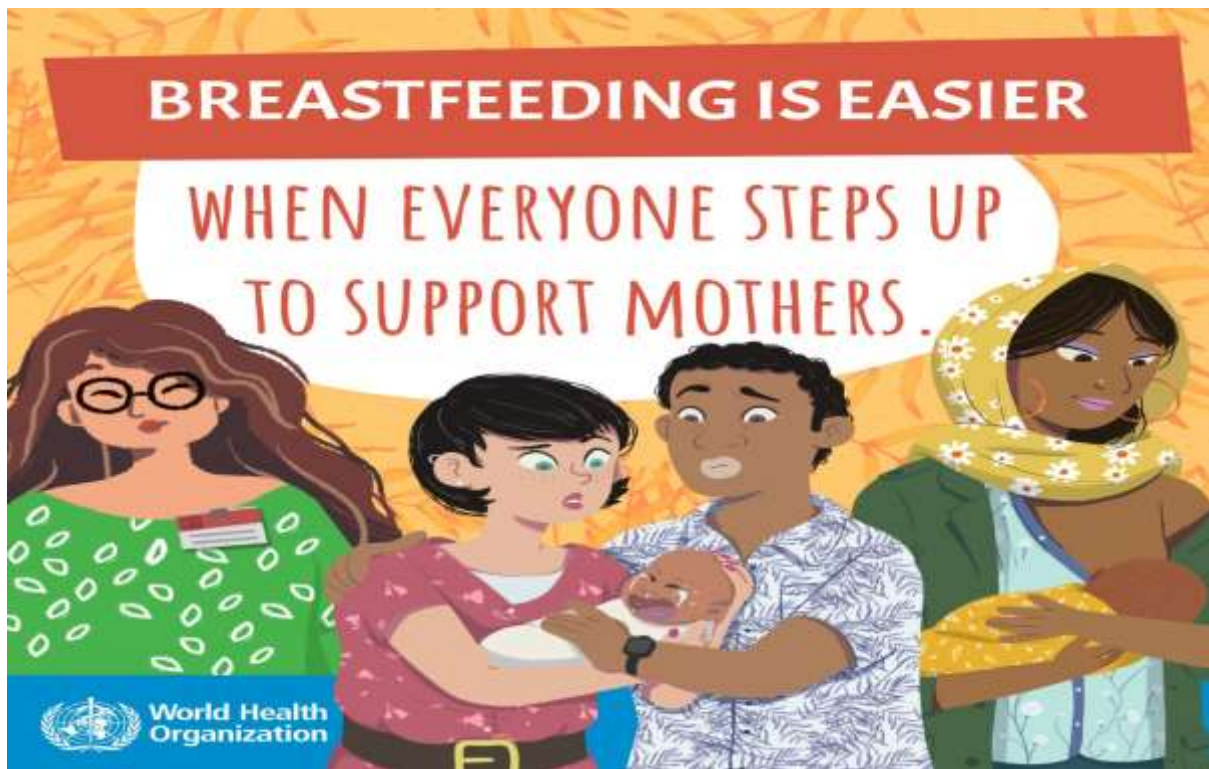
5.3. Breastfeeding counselling, support, and Lactation management.

5.1 Advocacy

Advocacy is one of the crucial interventions for breastfeeding. It encompasses the use of mass media, social mobilization, and messages that are specifically directed to stakeholders. These interventions aim to increase awareness and maintain supportive attitudes about breastfeeding by changing individual attitudes, sociocultural norms and organizational culture (87).

One of the key strategies adopted by the WHA in 2018 is World Breastfeeding Week, which occurs from August 1st to 7th every year. The aim of the yearly campaigns is to increase awareness about breastfeeding. This includes creating a supportive environment for breastfeeding, which encompasses community and workplace support as well as government protection through policies and legislations (88).

One of the key messages used of World Breastfeeding Campaigns.



Source: WHO. World Breastfeeding Week, 2023 (88).

In 2021, the World Food Programme (WFP) and UNICEF supported World Vision's breastfeeding campaign in Juba to provide breastfeeding messages to women. The campaign successfully reached approximately 5,600 mothers through mother-to-mother support groups, where audio recorded messages on EBF were shared via radios. 462 mothers were counselled daily contributing to improved breastfeeding practices within the community (89). The mother support groups, consisted of 10-15 caregivers, effectively disseminated the information, and facilitated discussions to understand community challenges related to breastfeeding (89).

Breastfeeding campaign in Juba during World Breastfeeding week in August 2021.



Photo credit: World Vision, South Sudan, 2021(88).

In the global context, a systematic review on scaling up of breastfeeding programs in LMIC indicated that in Brazil, Mass media has been used to engage women in breastfeeding program with a particular focus to encourage women to breastfeed exclusively through messages. The aim was to dispel the misconception that mothers do not produce adequate breast milk. Messages were incorporated into electricity bills and televisions exposing families and women to wide range of breastfeeding information (90).

In addition, mass campaign generated support from stakeholders which contributed to the success of breastfeeding program. In this case, the Brazil National nutrition institute sought funding from UNICEF to create audiovisual presentations. The presentation featured popular paediatricians with key messages that, “promoting breastfeeding can save money”. After presenting to politicians, the government accepted to launch the National Breastfeeding program (90).

In 2009, Bangladesh and Viet Nam implemented breastfeeding programs through mass media advocacy and community mobilization to improve the breastfeeding outcomes. Bangladesh delivered the services through health programs run by private sector while Viet Nam integrated

the services into public facilities. The rate of EBF increased from 49 percent to 88 percent in Bangladesh and Viet Nam recorded an increase from 19 percent to 58 percent (91).

Uganda implemented the use of radio stations to scale up breastfeeding counselling in the community. Printed messages and electronics were also used for peer group counselling. The media offered a great opportunity to dispel many myths regarding exclusive breastfeeding. The advocacy involved well known personalities (role models), religious organizations and professional associations like the Paediatric, Midwives and Nurses associations to promote breastfeeding practices (92).

5.2 Policies, Legislation, monitoring, financing.

5.2.1 Policies.

The section examined available policies in South Sudan that are used to promote good breastfeeding practices. It covers the national breastfeeding strategy/guidelines and workplace policy in South Sudan.

1. National breastfeeding strategy/guidelines

In this study, four Key informants were interviewed to get an insight about the existence and use of National breastfeeding policy or guidelines used by health facilities for counselling, supporting, and managing breastfeeding challenges in South Sudan. All the four key informants revealed that the health facilities use various guidelines such as Maternal, Infant, and Young Child Nutrition (MIYCN) guidelines, Clinical guidelines, and Community Management of Acute Malnutrition (CMAM) guidelines.

Out of the four Key informants, two informants indicated that UNICEF supported facilities use the MIYCN guidelines in supporting breastfeeding mothers. Challenges related to this is adherence to the guidelines by health providers. According to the informants, the health providers were found of prescribing formula milk despite receiving training on breastfeeding counselling and support.

“Training is not a guarantee that knowledge is passed, and it will be used. In many cases there are some health workers or some doctors who have been trained.... are the same doctors who would prescribe the formula.... because for them, they have this understanding that well, it is taking too long for the milk to come, so we need to do something....”. UNICEF Staff.

“We had a Paediatrician. Who was practicing at Juba Teaching Hospital. A well-trained Paediatrician and who used to, you know, prescribe, you know this formula to every newborn. Yeah, every newborn baby. And then we worked with the Department of Nutrition, in order to try to stop that, because that was interfering with breastfeeding”. Obstetrician Gynaecologist.

The Key informant from HPF indicated that, the HPF supported facilities use clinical guidelines which have a component on early initiation of breastfeeding, skin to skin care and exclusive breastfeeding. According to the Informant, health providers were complying to the guidelines because HPF were conducting regular supervision to the facilities to ensure adherence to good clinical practices. The challenge highlighted in the implementation of guidelines was the inadequate number of health providers to dedicated time to counselling sessions.

The Informant from WHO mentioned the use of MIYCN guidelines and CMAM guidelines for breastfeeding counselling, support, and management. While the fourth informant was not sure of which guidelines is being used but admitted having heard of MIYCN guidelines.

*“There is shortage of staff in health facilities. At times they don’t have time for counselling.”
Said HPF Staff.*

“We have trained health workers on breastfeeding counselling for example 7 health workers, unfortunately 3 out of 7 would practice what they were taught.” said UNICEF staff.

The MIYCN strategy.

The MIYCN strategy serves as a comprehensive framework for improving maternal and child well-being including breastfeeding recommendations in South Sudan (65).

In line with the fourth objective of this study, this section aimed at describing the components of the strategy designed with the primary objective to promote, protect, and support breastfeeding practices to understand its significance in enhancing breastfeeding practices in the country.

Development of the MIYCN strategy.

In 2017, the MOH with support from UNICEF, WHO, and WFP developed the first MIYCN strategy from 2017 to 2025 alongside guidelines to address morbidities and mortalities resulting from malnutrition among women and children. It was developed based on the

National Health Policies such as the Boma Health Initiative, the Draft National Nutrition Policy and the Basic Package of Health and Nutrition Service (65).

Goal and Priorities of the strategy.

The aim of the strategy is to improve the overall health and nutrition status of women and children by delivering essential nutrition services with main focus to prevent undernutrition within 1000 days of the child’s life (from conception to 2 years) (65). Table 3 shows the indicators set to improve infants’ nutrition in relation to breastfeeding.

Table 2: Nutrition indicators in relation to breastfeeding in the MIYCN strategy (65) (20).

SN	Indicator	Baseline rates	Targets	Current rates (2022).
1	Increase early initiation of breastfeeding first hour of birth	48%	75%	63.4%
2	Increase exclusive breastfeeding in first 6 months	45%	At least 70%	62.3 %
3	Increase continued breastfeeding up to 2 years	38%	60%	68%
4	Timely introduction of complementary foods	21%	At least 50%	-
5	Reduce stunting by 10%	31%	21%	-
6	Reduce wasting	23%	<13%	16.2%

Proposed recommendations to promote and support breastfeeding in the strategy.

The strategy proposed different delivery methods of services and needed interventions to promote breastfeeding in the population as described below.

1. Creation of mother-to-mother support groups

The strategy proposed the formation of mother-to-mother groups which would comprise of pregnant and breastfeeding women who usually meet and discuss issues related to MIYCN with more focus on lactating mothers in the rural areas (65). According to UNICEF 2022 press release, there are 4500 mother-to-mother support groups supported by UNICEF in South Sudan consisting 15 members in each group (22).

The approach was adopted based on evidence from other countries that recorded success in implementing breastfeeding programs. For example, the 52 studies in Cochrane in 21 countries which reveal that, extra breastfeeding support for mothers from lay people and health experts improved breastfeeding results (93). Another study in India indicated double increase in the rates of early initiation of breastfeeding and half a reduction in prelacteal feeding after the creation of the mother to mother support groups (94). Similarly, in Kenya the implementation of such groups showed significant increase in breastfeeding practices (95). The support mother groups provide support by:

- Giving women necessary information needed for them to make an informed decision about breast-feeding practices (65).
- Providing self-assurance to women to have positive experiences about breastfeeding practices (65).

2. Establishment of Mother-Baby friendly spaces.

The strategy proposed the establishment of Mother-Baby friendly centres aimed at providing privacy, breastfeeding support, and counselling services for internally displaced mothers (IDPs) to encourage them to breastfeed in open spaces without stigma as well as providing comprehensive psychological support to them (95). The mother-baby friendly spaces offer:

- Encouragement of breastfeeding to lessen the use of breast milk substitutes.
- Provision of sustainable and ideal solution to infants who cannot breastfeed (65).

3. Provision of alternative feeding for infants without breastfeeding possibilities.

The strategy recommends careful consideration of feeding options for infants who have breastfeeding problems and a conclusion has been made to use breast milk substitutes. For

example, if breast milk substitute has to be given to an infant less than 6 months, it must be recommended by a trained health professional (95).

4. Prevention and management of breast milk substitute donations.

The strategy also proposed reporting of any donations of formula products by all stakeholders in accordance with the International Code of Marketing of formula products (95). The Code consists of set of regulations that prohibit any form of advertising and promotion of breastmilk products such as formula, teats and feeding bottles (96). Please refer to the section of legislation for more information about the marketing code.

5. Breastfeeding support and management.

a. Infants < 6 months.

Early initiation of breastfeeding

The MIYCN guidelines recommends early initiation of breastfeeding in one hour after birth for all newborns to facilitate the consumption of colostrum, nursing babies skin to skin and educating mothers to recognize cues of breastfeeding (65).

Exclusive breastfeeding

The guidelines recommends EBF on demand up to the age of 6 months and counselling mothers not to feed their babies with water, formula milk, semi-solid and solid foods except for oral medications or vitamins when recommended by a health expert (65).

b. Infants > 6 months old

Continued breastfeeding for 2 years

The guidelines recommends continued breastfeeding on demand up to at least 2 years while introducing appropriate and safe complementary foods when the infant reaches 6 months (65) as shown in table 3 below.

Table 3: Recommended daily complementary feeding (65).

SN	Infants age	Daily frequency of feeds
1	At 6 months	2-3 times
2	6-8 months	3-4 times
3	9-11 months	5-6 times.
4	12-23 months	7-8 times

2. Workplace policy

As mentioned in section of workplace and employment determinants, little is known or documented about workplace policies to protect breastfeeding mothers in South Sudan.

Globally, workplace policies outline important measures to support and provide conducive environment for female employees who are breastfeeding or expressing breastmilk while at workplace (97) (72). The guidelines suggest three actions: Provision of paid maternity leave, provision of breastfeeding breaks and safe space for breastfeeding and provision of breastfeeding support including information about the importance of maternity (98).

The Key informant interviews revealed that women are entitled to paid maternity leave in South Sudan. All the four key informants confirmed that, South Sudan's law allows women to go for three months maternity leave for both public and private sectors. However, there are no workplace spaces for breastfeeding, break time and restriction of breastfeeding products at work. Additionally, it is not clear if the policy is formalized and made available at workplaces and whether it is used in the informal sector.

*(“.....the only workplace guidelines I came across is the three months provided for maternity leave, but I don't know if it is written..... maybe I will look for it and send it to you.”
Obstetrician gynaecologist.)*

The Key informants viewed the three months maternity leave insufficient to provide exclusive breastfeeding for six months and the lack of support from workplace presents a major challenge for lactating mothers since they are expected to return to work after three months of delivery.

In line with the workplace guidelines, countries such as Bhutan, Brazil, Vietnam, Mongolia have passed legislations to increase maternity leave for mothers in civil service to six months with full salaries. Uganda implemented 'maternity protection' to mothers working in all sectors by providing maternity leave, breastfeeding breaks, worksite accommodation and facilities for child (14).

5.2.2 Legislation

As mentioned in the section of policies, South Sudan is among the countries that have not adopted and developed a national policy and law to protect against the marketing of BMS.

In this study, four Key Informants were interviewed to get an insight about national legislation used to protect mothers against BMS in South Sudan. The key findings from the interviews indicate lack of formal policy or legislation for marketing and promotion of BMS.

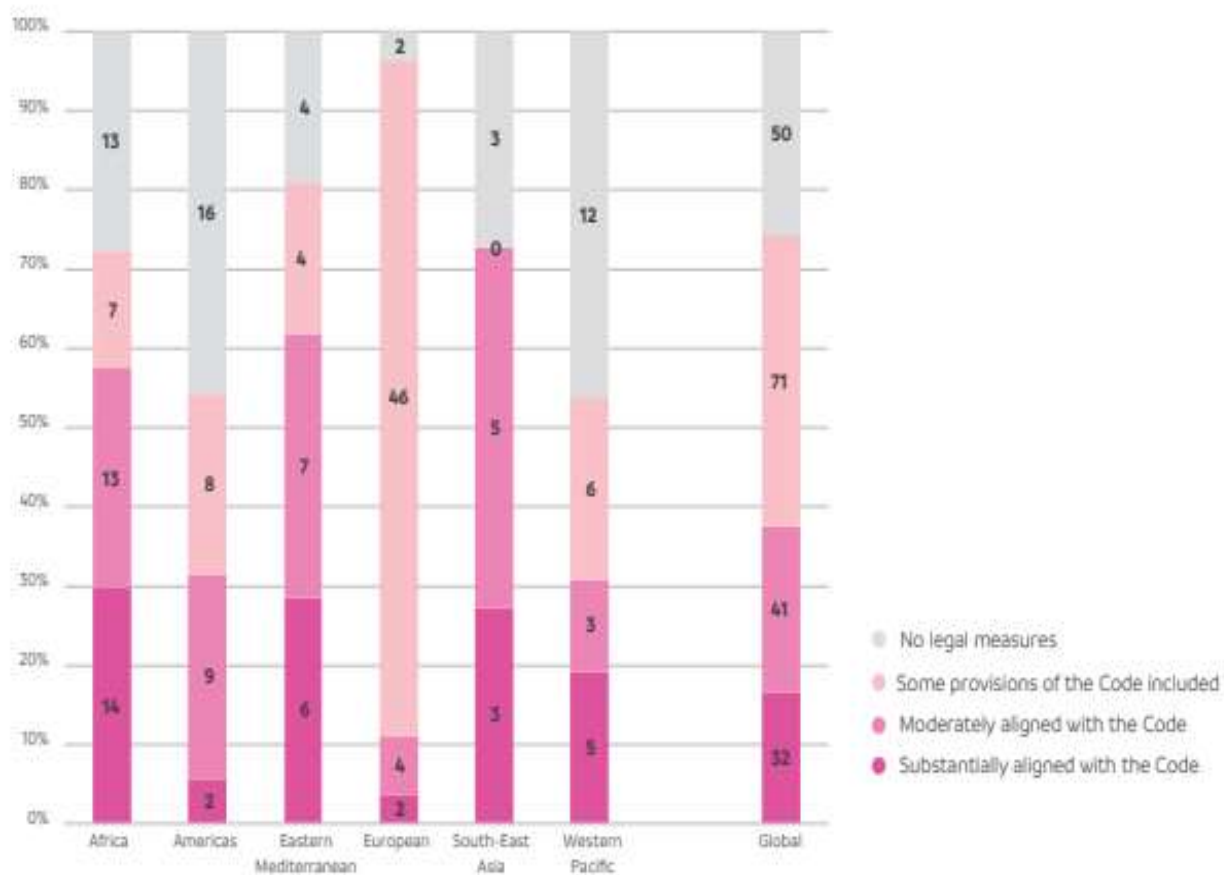
All the four respondents confirmed the absence of national legislation for BMS. One of the respondents said, the health system only depends on counselling mothers about the importance of breastfeeding without any law protecting against BMS. One respondent said, despite the lack of legislation in the country, formula milk is not readily available in the remote areas.

“South Sudan acknowledges and is in the process of adopting the international marketing code passed by the WHA in 1981. There is no law to restrict the marketing of infant formula. We rely on educating the mothers on the importance of breastmilk but if they want to buy, we cannot prevent it”. Said UNICEF Staff, South Sudan

In 1981, the WHA adopted and recommended “the international code of marketing BMS” known as the Code in the 34th assembly in response to the risks of marketing and advertising breast milk substitutes (99). The aim of the code is to regulate the marketing practices of BMS, promote and protect breastfeeding practices by establishment of guidelines for the promotion of BMS and prohibit advertising, promotion, and free distribution of BMS to health professionals, health facilities, and the public (3) (99).

In 2022, the WHO report on the status of the Code shows that 144 countries out of 194 member states adopted the Code: 32 countries had put restrictions to promotion of BMS in accordance with the Code; 41 countries had measures moderately aligned; 71 countries had some provisions; and 50 did not have any legal measures (99) as shown in figure 5 below.

Figure 6: The legal status of the Code as adopted by 194 WHO region countries.



Source: Market of breastfeeding substitutes: National implementation of the international code report (99).

Switzerland imposed additional restrictions on teaching materials and information in line with the code's rules; Viet Nam recently endorsed a new order that modifies the possible punishments for violating the Code; in Africa 3 countries that did not have legislation (Sao Tome and Principe, Mauritania, and Sierra Leone) passed news laws. Ethiopia passed a robust new law to replace previous laws that only addressed a few components of the Code (98).

An effective national legislation (Code) to regulate BMS requires empowerment of government entities to monitor adherence to the legal measures and enforcing the laws including penalties when the code is violated (99).

5.2.3 Monitoring.

Based on insights from the four Key Informant interviews, monitoring breastfeeding practices was identified as a challenging task. The collection of breastfeeding statistics has consistently relied on and derived from WFP survey reports. All the participants emphasized the absence of established protocols and indicators for effective monitoring and evaluation (M&E) of breastfeeding practices across the country. While breastfeeding counselling and support predominantly take place within health facilities, there is often no follow-up once the mother is discharged home.

5.2.4 Financing

There is no published evidence on financial expenditure specifically allocated to breastfeeding interventions in South Sudan. However, based on interviews with key informants, three respondents stated that organizations like WHO, UNICEF, and HPF do not provide direct funding to the Ministry of Health (MOH) for breastfeeding initiatives. Nevertheless, they support the MOH by training healthcare professionals on breastfeeding, developing guidelines, and monitoring progress. One of the participants mentioned that the lack of funds has led to the incomplete implementation of the Baby-Friendly Hospital Initiatives (BFHI) guidelines. The MOH, in collaboration with WHO, drafted the BFHI guidelines but faced challenges in completing them due to financial constraints. More information about BFHI is discussed in the context of Lactation management below.

“We developed a draft document for baby friendly hospital to support breastfeeding, but it is pending finalization because there are no funds. We conducted our first training.” WHO Staff.

While there is no literature on breastfeeding financing in South Sudan, some proxy information about the funding of breastfeeding interventions is provided below.

Globally, the spending on breastfeeding has declined. Historically, United States Agency for International Development (USAID) has been the primary contributor to funding breastfeeding programmes. However, their financial support for the promotion of breastfeeding subsequently declined from 16.6 million US dollars in 1999 to 13.3 million US dollars in 2003 and further dropped to 2.3 million dollars in 2005 (19) (18). A noticeable rise in funding was observed for the prevention of HIV transmission from mother to child, indicating a shift in the allocation of funding priorities to HIV/AIDS (18).

A study on investing in breastfeeding estimated costs for breastfeeding interventions. The costs for interventions include passing of Legislation, Training of staff, monitoring of the international code, M & E Tool, maternity Leave and Advocacy (100).

There is limited research on breastfeeding intervention costs in Africa. A South African study found cost-effective results from combining health facility and home-based interventions. The intervention engaged community health workers, and training of counsellors. This approach reduced service demand, allowing wider access as well as enhancing family saving from formula use. Overall, cost-effective breastfeeding strategies could enhance access and savings in Africa (101).

In Uganda, the research into the cost-effectiveness of peer counselling for breastfeeding demonstrated that this approach led to a twofold increase in the prevalence of EBF. Nevertheless, it proved to be economically inefficient as its expense exceeded three times Uganda's GDP per capita (102).

5.3 Breastfeeding counselling, support, and Lactation management

The section discusses the actions and programmes intended to support and manage breastfeeding challenges including information, skills, and self assurance (103) for mothers to feel more confident and dedicated to breastfeeding in challenging environments (104).

5.3.1 Breastfeeding counselling and support

Breastfeeding counselling refers to the interaction between a health professional and clients (pregnant or lactating mothers) (1). The purpose is to advise all mothers about the benefits of breast feeding and educating them how to breastfeed including the right timing of breastfeeding soon after birth, rooming and appropriate positioning and breast attachment (1). However, the counselling skills and ability of health professionals to handle breastfeeding challenges are crucial in breastfeeding counselling and management (97,105).

In South , breastfeeding counselling was reported to be inadequate (48). This could be explained by the lack of knowledge about benefits of breastfeeding by health providers (66), the critical shortage of health workers (32) and lack of facilities and programs for breastfeeding support (48).

In addition, the key informants' interviews found lack of preservice training of health workers on breastfeeding counselling, support and management and poor compliance by health workers

trained in-service. One of the Key Informants mentioned shortage of staff at the facility as a barrier to breastfeeding counselling as the few staff could not find time to carry out counselling because of the overwhelming workload. One respondent said the in-service trainings designed for breastfeeding by health implementing partners targets nutrition workers while health providers such as nurses and doctors who deal with mothers during antenatal and period are not included in the training.

(“..... there is no preservice training on breastfeeding in the medical curriculum that is why, one of the pedestrians at Juba Teaching Hospital was found of prescribing formula milk to every newborn at the hospital....” Said Obstetrician Gynaecologist).

“The same health workers trained on breastfeeding are the same ones who prescribe formula milk.” UNICEF Staff.

Studies on effectiveness of breastfeeding support among LMIC show improvement in breastfeeding outcomes following interventions such as hospital based counselling and home based counselling of mothers (106) (87). A similar study in the same context indicates that, breastfeeding support and counselling was linked with 24% increase in early initiation of breastfeeding (107).

Studies in Ethiopia show that breastfeeding counselling promoted exclusive breastfeeding (105) (62) by threefold (105). The researchers believed that the improving is related to the women’s appreciation of the breastfeeding information (105).

Timing of breastfeeding counselling

Breastfeeding counselling and support should start antenatally and immediately after birth for the mothers and family members to care and relate well with their baby. The aim is to enhance loving and favourable environment for the infant to thrive (1).

Postnatally, breastfeeding counselling is done to provide support to the mothers and families to maintain skin to skin care and breastfeed on demand. Emphasis is put on the mothers to recognize the milk projection and establish self-confidence. Additionally, the caregivers maybe given advice on where and when to seek breastfeeding assistance in case of potential challenges (1).

Frequency of breastfeeding

WHO recommends at least six breastfeeding counselling meetings throughout antenatal, postnatal and when complementary feeding is initiated: First meeting, during ANC, second meeting, within two weeks of neonatal period, third meeting, within three to four months of early infancy, fourth meeting, at six months of starting complementary feeding, fifth meeting after six months, Sixth meeting, whenever necessary (1).

5.3.2 Lactation management

The Baby friendly hospital initiatives (BFHI)

As discussed under the financing of breastfeeding interventions in the first paragraph, the BFHIs is still not adopted to provide conducive space for breastfeeding in South Sudan.

The declaration of the Innocenti emphasizes the implementation of 10 steps (see table 10) of the BFHI in all health facilities providing maternity services (108) (109). The BFHI serves as a starting point for incorporating breastfeeding services into the health system (110) to provide sustainable breastfeeding support (111). The BFHI equips health facilities with steps and resources to raise breastfeeding awareness (110) including mass media advocacy (111).

Table 4: The ten essential steps of BFHI necessary for health facility or community (112).

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1. Establish a formal breastfeeding policy and regularly inform all medical personnel of it.
 2. Provide a training to all health workers to implement the breastfeeding policy.
 3. Educate all pregnant mothers about the importance of breastfeeding and its and management.
 4. Encourage mothers to start breastfeeding immediately after birth (within 1 hour).
 5. Educate lactating women how to nurse their infants and maintain breastfeeding through expressing milk, even when their babies would be removed from them.
 6. Promote EBF up to 6 months unless a trained health professional indicates a need to give something other than breast milk.
 7. Promote rooming-in for at least 24 hours.
 8. Encourage responsive breastfeeding (on demand).
 9. Infants who are breastfeeding normally should not be given products such as pacifiers or artificial teats commonly known as soothers or dummies.
 10. Establish groups that will support mothers with breastfeeding after hospital discharge.
-

Most countries worldwide implement BFHI programs with slow progress. In 2011, only 28% of health facilities were allocated “Baby friendly” and 10% of infants were delivered in Baby-friendly facilities in 2017 (108).

Several studies showed that compliance to the 10 steps has positive impact on breastfeeding practices generally. For example step 6 was key in preventing prelacteal feeding of newborns and step 10 contributed to the sustainability of improved breastfeeding practices provided by the health facilities (108).

The global survey conducted in 2016 found that the BFHI improved the capacity of health workers, facility practices and breastfeeding rates globally. The approach was also appreciated by many policy actors (113). A systematic review of breastfeeding interventions shows that Baby friendly support in Health systems demonstrated the greatest improvement in promoting all forms of breastfeeding (87).

Chapter 6: Discussion, Conclusion and Recommendations

6.1 Discussion

This study explored the determinants of breastfeeding practices and interventions to promote good breastfeeding practices in South Sudan. The study revealed that knowledge of importance of breastfeeding was good among the urban population that visited the hospital. However, this finding could not be generalized to the rural population as majority of South Sudanese live in the rural areas. Despite the level of knowledge reported, the prevalence of PLF was high among South Sudanese women indicating a gap between translating knowledge into ideal breastfeeding practices.

Based on the framework, several factors interacted at different levels of the framework. For example, prelacteal feeding interacted at different levels: individual level, it was associated misconception that the baby might be hungry or thirsty due to the hot weather; at sociocultural setting, it was linked to disposition of colostrum because it was considered dirty and not useful to the baby; at health care level, it was associated with lack of breastfeeding counselling and the mode of delivery. The commonly used feeds include water, cow's milk, infant formula, glucose solution and porridge.

In general, the use of prelacteal feeding practice before 6 months of age does not conform with the WHO breastfeeding recommendation and demonstrates lack of knowledge on good breastfeeding practices at different levels. This practice may be explained by differences in understanding the benefits of breastfeeding, difference in advice received from relatives and sociocultural beliefs and variation in advice given by health professionals. Also, the health professionals may have a perception that when there is a delay in milk production, the baby needs to be complimented with other foods for them not to starve. Moreover, exposing infants to prelacteal feeds before 6 months can predispose them to infections as well as poor nutrition. This may be worse in a country like South Sudan which has inaccessibility to safe and clean water.

More attention is needed to implement behavioural interventions that would enhance mothers' knowledge on breastfeeding practices and educating health workers about the benefits of breastfeeding and the physiology of milk production. For example, at health systems level, training the health workers on breastfeeding to prevent the separation of babies from their mothers within health facility and promoting breastfeeding counselling to help mothers exhibit

positive attitudes towards breastfeeding; on individual level, advocacy to enhance the mother's to belief that breastmilk is adequate and allow for frequent breastfeeding, at sociocultural level, enhancing positive beliefs and attitudes among fathers and relatives about breastfeeding.

Another factor that interplayed at different levels is HIV: At individual level, it interacted with awareness and knowledge of the risk of transmission through breastfeeding; At the environmental level, the mothers' choices to feed their infants is influenced by the availability of formula milk; At the healthcare setting, it associated with the advice given by health professionals about breastfeeding that conflicted with the guidelines; At family level, the disclosure of HIV status to relatives provided.

HIV infection can spread through breastfeeding. However, the transmission depends on factors such as the mother's viral load and presence of breast conditions (mastitis and cracked nipples). Given the possibility of transmission of HIV infection through breastfeeding, policymakers developed guidelines to reduce transmission while enhancing the infant's health. One of the recommendations is exclusive breastfeeding for the first six months of life, followed by the introduction of complementary foods and continued breastfeeding up to 12 months or beyond in resource constrained settings. This recommendation was based on evidence that breastfeeding offers immunity and nutrition to the infant which outweighs the potential risk of HIV transmission. This study found that these guidelines were misinterpreted by health professionals. Health professionals often advised mothers to stop breastfeeding at six months leaving mothers with no choice but to feed their infants with formula milk. To address this misguidance by health professionals, there is need to increase capacity building for the health workers on the benefits of breastfeeding and ensuring adherence to guidelines.

Breastfeeding challenges such as perceived insufficient breastmilk production and perceived pain were some of the significant barriers to breastfeeding which might influence the maternal decision to breastfeed. It is unclear if these maternal perceptions were accurate. These mothers would benefit from breastfeeding counselling which would enrich mothers with adequate information about the production of milk and how it can be sustained.

This study revealed that women returning to their place of work encountered various challenges. The inadequate maternity leave, lack of convenient area and time to express or breastfeed babies and little support from employers conflicted with exclusive breastfeeding. This places women in vulnerable state of managing breastfeeding and often left their babies to

be fed with complementary foods at home by relatives. Some mothers may receive discouragement from co-workers and employers to discontinue breastfeeding to meet the job regulations. The evidence suggests that support from relatives, family and workplace is crucial for effective breastfeeding. Interventions aimed at relatives, families, and employers to enhance breastfeeding practices among working women may promote EBF practices.

Little is known about workplace policies in South Sudan. However, some countries have increased paid maternity leave to six months. Nonetheless, research shows that mothers become less compliant to the 6 months maternity leave due to concerns of losing employment and economic status. Also, implementing such policy requires financial investment yet approximation of the costs to cover for breastfeeding interventions including maternity leave has proven challenging in many countries due to lack of data on breastfeeding.

Enhancing workplace that is conducive for breastfeeding may be more feasible to maintain breastfeeding practices while securing women's jobs. One key effort of the BFHI is to educate mothers to express breast milk to support breastfeeding while they are at work. This is possible if lactating mothers know how to express milk and store it safely. The findings in this study indicate that mothers lack the knowledge of breastmilk expression because they thought it was not necessary to express breast milk. Emphasis should be placed on educating mothers about breastmilk expression to support them when they are not at home.

The study also found that marketing of BMS is drawing women's interest and interfering with their confidence to breastfeed. Also, the health professionals are persuaded to prescribe BMS giving false impression that BMS are superior to breastfeeding. The companies use various manipulative methods on parents and health professionals to market their products leading to self-doubts such as television campaigns, social media, provision of free samples, digital influencers (celebrities and paediatricians), use of posters in hospitals, pharmacies and offering of commissions to health professionals to prescribe their products.

The use of the deceptive advertising puts people at risk of mistakenly believing that BMS are appropriate for their babies, and it can be more misleading for the illiterate and the poor people. Of note, mothers living in urban (cities) areas are at high risk of being exposed to BMS advertisements than women in rural areas. To have successful regulation of marketing of BMS, countries need to integrate global approach into their systems.

The proposed mechanism to regulate the widespread use of BMS is adoption of the marketing Code. However, this requires strong political will to develop a legislation against marketing and the ability of government to enforce laws. Evidence shows that countries that can develop regulations, oversee their implementation, and penalize those who violate them have recorded successful compliance to the code. In the context of South Sudan, the Code is not yet adopted, legislated and marketing of BMS is not monitored while the BMS industry keeps on advertising their sales.

The healthcare setting was found to be crucial in providing enabling environment for breastfeeding. A supportive and equipped health system with knowledgeable health professionals can promote recommended breastfeeding practices during antenatal period and sustain it throughout postnatally which can significantly influence the mother's decisions to initiate and continue breastfeeding. In this study, the results suggest lack of knowledge of breastfeeding by health professionals, inadequate number of health workers and lack of breastfeeding guidelines.

Health workers like doctors, nurses and midwives could counsel and support mothers on breastfeeding by providing evidence-based information and countering misconceptions if they received the necessary training and support. In addition, healthcare facilities that follow the BFHI guidelines contribute to higher rates of breastfeeding. However, the establishment of BFHI and the training of health professionals require financial investment.

Finally, it is evident that multiple factors in the Rollins NC et al framework interplay at different levels of settings and it suggests interventions that can address these determinants. The framework offers the opportunity to have comprehensive analysis of the various factors and their interventions. However, it lacks specific elaboration on the constituents of each layer. For instance, within the individual factors, the framework mentions attributes related to both mothers and infants. Yet, under these attributes, factors such as age, education, parity, and similar aspects are included. This pattern is consistent across all layers of the framework.

Strengths and limitations of the study

This study employed a mixed-methods approach to gather information on breastfeeding practices. It combined literature review and key informant interviews to offer a comprehensive understanding of the determinants of breastfeeding practices and interventions to promote them, which were previously unexplored in the context of South Sudan. The approval of the

waiver from the Research Ethical Committee facilitated the conduct of key informant interviews.

The study encountered difficulty in engaging Key Informants from government sectors, particularly the Nutrition and Child Health departments, despite multiple attempts. This hindered gaining insights from these important stakeholders. Additionally, the Ministry of Health's involvement in nutrition activities and breastfeeding, as a lead partner, remained unexplored due to the challenges in obtaining their input.

It is worth noting that the key informants' interviews were used to supplement online information and their purpose was not to validate the results.

6.2 Conclusion

The study found support from relatives, family, and community as a facilitator to breastfeeding. However multiple factors hindered breastfeeding practices in South Sudan including lack of knowledge of good breastfeeding practices, misconception about breastfeeding, lack of breastfeeding counselling and support, inadequate breastfeeding guidelines and programmes, lack of workplace policy, deficient legislation to regulate marketing of BMS, and inadequate financing, and monitoring mechanism for breastfeeding.

Interventions to promote breastfeeding should aim at raising awareness about the benefits of breastfeeding at family and community levels through health system and community approaches, adopting the code and developing national policies to regulate marketing of BMS and enhancing workplace environment, and investing on breastfeeding guidelines, programmes, and health workforce. Influence of pregnancy and infant growth on breastfeeding, and workplace conditions are not studied in South Sudan and require further research.

6.3 Recommendations

Based on the findings, the following recommendations and actions are suggested to address the challenges of breastfeeding practices in South Sudan. In this context, three timeframes are provided to allow for flexible approach in implementing the interventions: 1. Short-term span is approximately 1-2 years and involves actions that can yield rapid results and address immediate challenges. 2. Intermediary phase: 2-5 years, aimed at implementation of medium range interventions. 3. Long term span encompasses interventions that can be implemented in a period beyond 5 years.

1. Enhancing breastfeeding support for women is crucial from preconception to post-delivery to achieve the breastfeeding targets. The inadequate healthcare professional assistance has led to low breastfeeding rates. To address this, the Ministry of Health, UN agencies (UNICEF and WHO), and maternal and child health NGOs should train healthcare professionals in breastfeeding counselling and support. Breastfeeding services should be integrated into routine ANC and PNC and expanded to communities. The MOH should Collaborate with the Ministry of Education for incorporating breastfeeding counselling into healthcare training institutions in a short term.
2. The study highlights the importance of clear breastfeeding guidelines for infant health promotion. Currently, the health system lacks consistency, with various non-specific guidelines in use. To address this, the Ministry of Health (MOH) should partner with UNICEF and WHO to establish comprehensive national breastfeeding guidelines (BFHI) and ensuring uniform implementation and adherence among healthcare professionals through regular supportive supervision should be a short-term priority.
3. South Sudanese women hold misconceptions about feeding colostrum and exclusive breastfeeding. Multiple strategies and programs exist to improve knowledge and awareness. Breastfeeding advocacy, through campaigns, targets improving understanding, attitudes, and support for breastfeeding mothers to foster widespread breastfeeding practices. The MOH should intensify breastfeeding awareness initiatives using social media and social mobilization. In collaboration with the Ministry of Mass Media and Telecommunication and other stakeholders, the MOH should establish a comprehensive breastfeeding advocacy strategy within a 2–5-year time frame.

4. The absence of a monitoring and evaluation system for breastfeeding highlights the necessity to create and enhance such a system to enhance infant feeding practices. To achieve this, the MOH, UNICEF and WHO should collaboratively establish breastfeeding goals, define indicators, implement data collection mechanisms, establish reporting pathways, employ technology, and foster consistent reporting feedback within a 2–5-year timeframe.
5. It is noted that exposure to breast milk substitutes has significant influence on the woman’s choice of breastfeeding and acts as a barrier to exclusive breastfeeding. The government should adopt the international marketing Code and develop a national legislation with measures and enforcement mechanism to regulate commercial marketing of breast milk substitutes within 2-5 years period.
6. The growing workforce of women is facing ongoing challenges with optimal breastfeeding while at work, emphasizing the need for supportive environments. To address this, the government should prioritize the development and enforcement of workplace policies. These policies could include allowing women to bring their infants to work, providing breastfeeding breaks and designated spaces for expressing milk and breastfeeding, and ensuring paid maternity leave across formal and informal sectors as part of a comprehensive long-term plan.
7. No research has been done on the following areas: influence of getting pregnant and infant growth on breastfeeding, workplace conditions, and financing of breastfeeding interventions in South Sudan. There is need for future research on these areas to understand their influence on breastfeeding in South Sudan in the long term.

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Chapter 8: Annexes

Annex 1. Research table

	TOPIC/OBJECT/TITLE Problem/Issue	AND	FACTOR-RELATED TERMS. (What I want to know about my topic)	AND	GEOGRAPHICAL Where is it?
OR	Infant breastfeeding		Social factors		Global
	Lactation				Sub-Saharan Africa
	Infants nursing				
	Initiation of breastfeeding		Cultural factors		East Africa
	Exclusive breastfeeding		Market factors		
	Continued breastfeeding		Family factors		South Sudan
			Community factors		
			Workplace and employment		
			Health systems and services		
	Individual factors (maternal and infant attributes).				
	Breastfeeding counselling				

			Breastfeeding support		
			Lactation management		

Annex 2. Data collection tool guide for the key informant’s interviews.

Theme	Topic	Issues	Questions	Respondents
Health systems factors	Counselling support, and lactation management	<ul style="list-style-type: none"> ○ Breastfeeding information ○ Breastfeeding counselling and support. ○ Place of counselling and support. ○ Training on breastfeeding. ○ Breastfeeding facilities. ○ Breastfeeding policies. ○ Breastfeeding programs ○ Monitoring and evaluation. 	<ol style="list-style-type: none"> 1. Where do women get breastfeeding counselling information and support? 2. How are health workers trained to support and promote breastfeeding in South Sudan? 3. How is breastfeeding rate monitored in South Sudan? 4. What are the challenges faced by health systems in promoting and supporting breastfeeding in South Sudan? 	Ministry of Health
		<ul style="list-style-type: none"> ○ Knowledge about breastfeeding ○ Health provider’s perception of breastfeeding 	<ol style="list-style-type: none"> 1. What is the knowledge of women about breastfeeding in South Sudan? 2. What is the experience of 	Health providers.

		<ul style="list-style-type: none"> ○ Time of breastfeeding counselling and support. ○ Place of breastfeeding counselling and support. ○ Availability of breastfeeding guidelines. 	<p>health workers on breastfeeding counselling and support?</p> <ol style="list-style-type: none"> 3. When and where is breastfeeding counselling and lactation management offered? 4. What guidelines are used at the facilities for breastfeeding counselling and support? 	
		<ul style="list-style-type: none"> ○ Availability of policies. ○ Availability of breastfeeding programs. ○ Partnerships. ○ Health provider's perceptions of the policies. ○ Monitoring and Evaluation. 	<ol style="list-style-type: none"> 1. What policies, guidelines and programs are in place to support breastfeeding within the health system in South Sudan? 2. How does the health system in South Sudan collaborate with other sectors or organizations to promote and support breastfeeding? 3. What are the experiences and 	<ul style="list-style-type: none"> ➤ UNICEF. ➤ WHO. ➤ HPF

			<p>perceptions of healthcare providers in South Sudan with regards to providing breastfeeding counselling and support, policies?</p> <p>4. How is the breastfeeding status monitored in South Sudan?</p>	
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Annex 3. Consent Form

Informed consent form for Key-informants' interviews

My name is Loguran Anthony. I am a public health master's student at Royal Tropical Institute in Amsterdam. The informed consent form attached below is for an interview I will use for my master's thesis research. Key informants Interviews are part of the methods that I will use in the thesis methodology.

Purpose of the study:

1. To explore the individual factors of breastfeeding among South Sudanese women in South Sudan.
2. To explore the sociocultural, and environmental factors (market context and workplace, family, and community settings) affecting breastfeeding practices among South Sudanese women in South Sudan.
3. To examine the health systems determinants affecting breastfeeding practices in South Sudan.
4. To analyse interventions that promote good breastfeeding practices globally and similar context to South Sudan.
5. To generate recommendations for policy makers to use evidence-based strategies, and programmes to improve infant breastfeeding in South Sudan.

This thesis seeks to answer the research question: What are the determinants of breastfeeding practices and interventions of good breastfeeding practices in South Sudan?

The Overall objective of the research: To explore the determinants of breastfeeding practices and interventions of good breastfeeding practices in South Sudan and generate recommendations to inform policymakers to use evidence-based strategies, and programmes that are culturally appropriate to improve infants' breastfeeding.

Duration and the tool of the interview: Interviews will be held over an hour to 1 hour. The interviews will be held through digital communication methods, for instance, zoom, or telephone calls, according to the digital method preferred by the person with whom the interview will be held.

Participation in the research is entirely voluntary; you can cancel your participation anytime during the research phase. You have the right not to answer any question you do not feel comfortable answering.

The risks and benefits: All questions will be about the influence of breastfeeding policy on maternal breastfeeding practices in South Sudan. There will not be any personal or sensitive questions during the interviews. One of the benefits of the research is that it covers the scarcity

of literature review, exploring the knowledge and awareness of the importance of breastfeeding and health systems factors affecting breastfeeding among South Sudanese women in South Sudan.

Confidentiality measures: The interview will be kept private and confidential. Nothing about the interview will be shared with anyone or any organization. Your name will not be used in interviews or other communications but only on this form because they will be merged with those of the other respondents, no one can tell which precise responses and answers you provided. The data gathered will only be used for the intended purpose of this research. All records and transcripts will be erased two months after this study (The master thesis) is submitted in August 2023.

Whom to contact if you need something: Please contact us if any issues emerge or if you have any inquiries.

Respondent Declaration: Please provide your name and indicate your agreement to participate in the spaces provided below by signing or writing your name. "I was given the opportunity to ask any questions I had, and all of my inquiries were satisfactorily addressed. I have been told whom to get in touch with if I have any questions, both verbally and in writing. I, therefore, agree to take part in this research.

Name: -----

Signature: -----

Date: -----

Declaration of the Interviewer: I Loguran Anthony, date 20th June 2022 declare that the responder has received a thorough explanation of the study's objectives, advantages, and risks. He/she has given me their approval.