

# Improving Maternal and Adolescent Nutrition



**Barrier Analysis Report**

June 2021



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# EXECUTIVE SUMMARY

## Introduction

Nutrition is among the development priorities in Tanzania, and the government has made significant progress in improving nutrition among pregnant women and children under five years of age. During the past two decades, Tanzania has shown a tangible reduction of malnutrition (including under-nutrition) from 50 per cent to 34 per cent.<sup>[16]</sup> However, despite these gains, there has been less improvement in nutrition indicators among women of reproductive age (WRA). One out of 10 women aged 15–49 years are thin (BMI<18.5), while overweight and obesity has doubled in the past 25 years from 11 per cent in 1991–1992 to 28 per cent in 2015–16, and almost half (45 per cent) of WRA and 57 per cent of pregnant women are anaemic.<sup>[16]</sup> Despite the high prevalence of anaemia in pregnant women, only 24 per cent of pregnant women started antenatal care visits during their first trimester, meanwhile, only 21 per cent of pregnant women in Tanzania reported to have used iron and folic acid (IFA) for at least 90 days.

## Objective

This qualitative study aimed to understand the barriers associated with the low use of health services including the uptake of IFA during pregnancy. Understanding these barriers will inform the Ministry of Health, Community Development, Gender, Elderly and Children and other nutrition and health stakeholders in addressing the challenges women and pregnant women face in accessing health services and hence in increasing the uptake of essential services for pregnant women. Increased uptake of IFA among pregnant women will greatly contribute to anaemia reduction and improve pregnancy and birth outcomes.

## Methodology

This was a qualitative research study where people with lived experience (pregnant and lactating women) and those at the community were interviewed in four districts of the Mbeya Region. The districts were Mbarali DC, Busekelo DC, Mbeya DC, and Kyela DC. Participants were purposively selected to participate in focus group discussions (FGDs) or in-depth interviews (IDIs). A total of 32 FGDs and 31 IDIs were conducted. FGDs included pregnant and lactating women, including young mothers (aged 15–19 years), husbands, and elderly women (aged >50 years). IDIs were done among village leaders, Medical Officers (MOs), Nutrition Officers (NOs), reproductive and child health (RCH) coordinators, RCH service providers, and community health workers (CHWs). All interviews were recorded, transcribed, and coded based on the themes identified during the FGDs and the IDIs. A line-by-line reading, and coding was conducted using NVIVO 12 software to identify the main and emerging themes while checking for consistency.

## Results

A total of 32 FGDs were conducted in four districts, in which 8 FGDs were conducted per district. A total of 252 people participated in this study. Out of the 252 participants, 57 were adolescents, 71 were pregnant/lactating women, 60 were male spouses of a pregnant woman or males who had a child aged less than one year, and 64 were older women. We grouped the results in the following themes: barriers to the use of ANC services among pregnant adolescents, barriers to the use of ANC services for older women, and challenges to the utilization of health services for pregnant women and adolescents.

Barriers to ANC use among pregnant adolescents included feeling shame for being pregnant; lack of support from the spouse for unmarried women; economic difficulties; long hours of waiting for the service; lack of trained health-care providers to provide friendly services; mistreatment from health professionals, particularly verbal abuse; and lesser education time, which contributed to low adherence to the advice. Older women have several barriers including distance to the health facility and geographical location (mountainous); lack of support from the spouses, especially single mothers; traditional beliefs, i.e., in which pregnancy is a secret until it shows-up and women might be bewitched if it is exposed early; and laziness, as they could not visit as often, especially for women who had given birth many times.

Regarding the use of IFA, health workers felt that mothers were using iron and folic acid supplementation (IFAS), since the drugs were dispensed freely to them during each ANC visit. However, women, adolescents, fathers, and elderly women admitted that most pregnant women were not using IFA daily. The main reason reported for not using IFA was the awful smell and taste which triggered nausea and sometimes induced vomiting. Other factors were a lack of knowledge on the importance of IFA, too many pills to swallow during pregnancy, and IFA regularly being out of stock at the health facilities. Poor uptake of ANC services was reported by key informants to be the main barrier to the implementation of maternal nutrition guidelines.

Barriers contributing to the low use of delivery services were the same for adolescents and older women. The barriers were: costs associated with purchasing delivery kits and transport cost, existence of local healers who are friendly and sensitive to culture that are used as alternative to care, lack of support from spouses, distance to the health facility which triggered travel costs, and the existence of field practitioners who were reported to have conducted unnecessary caesarean sections as part of learning.

## Conclusion

To improve the use of ANC services, individual factors such as the feeling of embarrassment in unmarried women and hiding the pregnancy due to the fear of being bewitched, require counselling. There is also a need to increase sensitization for male participation, the provision of outreach services in hard-to-reach areas, and free delivery services. Health workers are not trained to provide friendly services to adolescent specially girls. To increase adherence to IFA usage, their smell and taste need to be improved. Pregnant women should also be educated on the importance of IFAS and on ways to deal with its side effects. Additionally, the government should ensure full-time availability of IFAS in health facilities.

## Recommendations

- ◆ Build capacity of CHWs and local healers to promote early and frequent ANC visits
- ◆ Strengthen the social and behaviour change communication (SBCC) package and delivery through ANC visits, CHWs involving men, influential members of the community including alternative providers, traditional birth attendants (TBAs), faith leaders and village leaders
- ◆ Provide free delivery kits to pregnant women during their third trimester to minimize delivery costs
- ◆ There is a need to expand the delivery of essential services through Village Health & Nutrition Days (VHNDs) and explore linkages with socio net interventions (TASAF) to support poor women
- ◆ Health-care providers should provide focused education on the importance of IFAS/multiple micronutrient supplements (MMS) and on ways of coping with their side effects to increase adherence
- ◆ The government and other stakeholders should train health-care providers on adolescent-friendly services and ensure the provision of private areas to provide ANC services to adolescents
- ◆ The government should ensure the availability of basic supplies, commodities, and equipment at health facilities.



# ABBREVIATIONS

|                 |                                                                         |
|-----------------|-------------------------------------------------------------------------|
| <b>AAPH</b>     | Africa Academy for Public Health                                        |
| <b>ANC</b>      | Antenatal Clinic                                                        |
| <b>BMI</b>      | Body Mass Index                                                         |
| <b>BNA</b>      | Bottleneck Analysis                                                     |
| <b>CHMT</b>     | Council Health Management Team                                          |
| <b>CHW</b>      | Community Health Workers                                                |
| <b>CHW</b>      | Community Health Work                                                   |
| <b>DALYs</b>    | Disability-adjusted life years                                          |
| <b>DC</b>       | District Council                                                        |
| <b>DHS</b>      | Demographic Health Survey                                               |
| <b>DMO</b>      | District Medical Officer                                                |
| <b>DRCHCo</b>   | District Reproductive and Child Health Coordinator                      |
| <b>FGD</b>      | Focus Group Discussion                                                  |
| <b>HIMS</b>     | Health Information Management System                                    |
| <b>HIV</b>      | Human Immunodeficiency Virus                                            |
| <b>IDI</b>      | In-Depth Interview                                                      |
| <b>IFA</b>      | Iron and Folic acid                                                     |
| <b>IFAS</b>     | Iron and Folic Acid Supplementation                                     |
| <b>IHI</b>      | Ifakara Institute of Health                                             |
| <b>IMAN</b>     | Improving Maternal and Adolescents Nutrition                            |
| <b>LGA</b>      | Local Government Authority                                              |
| <b>M&amp;E</b>  | Monitoring and Evaluation                                               |
| <b>MMS</b>      | Multiple Micronutrient Supplements                                      |
| <b>MOHCDGEC</b> | Ministry of Health, Community Development, Gender, Elderly and Children |
| <b>MUIC</b>     | Median Urinary Iodine Concentration                                     |
| <b>NGO</b>      | Non-Governmental Organization                                           |
| <b>NMNAP</b>    | National Multi-Sectoral Nutrition Action Plan                           |
| <b>NuO</b>      | Nutrition Officers                                                      |

|               |                                                                            |
|---------------|----------------------------------------------------------------------------|
| <b>PORALG</b> | President's Office, Regional Administrative Authority and Local Government |
| <b>RCH</b>    | Reproductive and Child Health                                              |
| <b>RHMT</b>   | Regional Health Management Team                                            |
| <b>RMO</b>    | Regional Medical Officer                                                   |
| <b>RRCHCo</b> | Regional Reproductive and Child Health Coordinator                         |
| <b>TAG</b>    | Technical Advisory Group                                                   |
| <b>TFNCs</b>  | Tanzania Food and Nutrition Centre                                         |
| <b>UNICEF</b> | United Nations International Children's Emergency Fund                     |

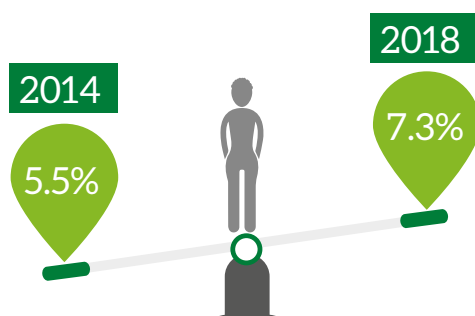
# INTRODUCTION

## 1.2 Background

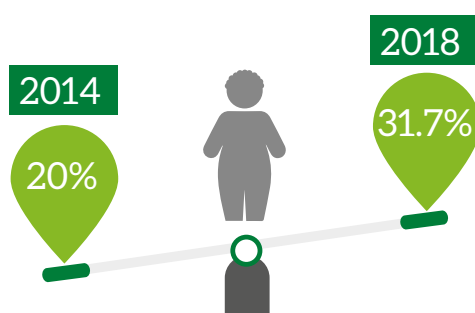
Between 1992 and 2018, the nutritional status of under-five children in Tanzania improved significantly with reduction in stunting from 50–32 per cent (TNNS, 2018). However, these improvements were not equally achieved for adolescents and women. In Tanzania, WRA (15–49 years) face the triple burden of malnutrition, including underweight, overweight/obesity and multiple micronutrients deficiency. The prevalence of underweight (BMI < 18.5) among WRA slightly increased, from 5.5 in 2014 (TNNS, 2014) to 7.3 per cent in 2018 (TNNS, 2018) while overweight and obesity (BMI ≥ 25.0) increased substantially, registering more than a 10 per cent increase within four years (20 per cent in 2014 to 31.7 per cent in

### Prevalence of underweight, overweight and obesity among women of reproductive age (15–49 years)

#### Underweight (BMI < 18.5)



#### Overweight and obesity (BMI > 25.0)



2018 (TNNS, 2018). Additionally, the 2010 Tanzania Demographic and Health Survey (TDHS) indicates a high prevalence of vitamin A and iron deficiencies in WRA (37 per cent and 30 per cent respectively) and in pregnant women as well (42 per cent and 33 per cent respectively). Recent surveys have also shown that 45 per cent of women (aged 15–49 years), and 57 per cent of pregnant women in Tanzania were anaemic (TDHS, 2016). The proportion of women (aged 15–49 years) with low iodine levels (<150 ug/L) has also remained high at 45 per cent in the most recent surveys. Adolescents are also disadvantaged in terms of their nutrition status. A 2020 school malaria and nutrition survey indicated that adolescents (aged 10–19 years) have higher rates of underweight (18 per cent), and anaemia (32.3 per cent). Despite these nutritional challenges, only 1/4 (25 per cent) of pregnant women have their first ANC visit during the first trimester and only 21 per cent use IFA for 90 days (TDHS, 2016).

Several studies have linked poor nutritional status among pregnant women and WRA with adverse birth and nutritional outcomes among neonates and children. Maternal anaemia is evidenced to

contribute to poor pregnancy and child outcomes. Anaemia during pregnancy causes fetal growth retardation (King, 2003), placental abruption, preterm delivery, stillbirths, low birth weight (LBW), neonatal mortality (Tunkyi & Moodley, 2018) gestation diabetes mellitus (GDM), polyhydramnios and neonatal complications and neonatal intensive care unit (NICU) admissions (Lin et al., 2018). It also leads to premature births as well as an increased risk of maternal mortality. In Tanzania, this is evidenced by current high rates of either preterm births (15 per cent), babies with LBW, (7–10 per cent), or small for gestational age (SGA) (16.6 per cent) babies, along with slow progress made in further reducing the rates of under-five stunting and underweight from 2010 to 2015.

### Problems related to anaemia during pregnancy

- 1 Fetal growth retardation
- 2 Placental abruption
- 3 Preterm delivery
- 4 Stillbirths
- 5 Low birth weight
- 6 Neonatal mortality
- 7 Gestation diabetes mellitus
- 8 Polyhydramnios and neonatal complications
- 9 Neonatal intensive care unit admission
- 10 Prematurity
- 11 Increased risk of maternal mortality

## World Health Organization (WHO) recommendations for WRA and pregnant women

In 2016, the World Health Organization (WHO) published updated recommendations and guidelines on antenatal care for pregnant women globally (WHO Recommendations on Antenatal Care for a Positive Pregnancy Experience, 2016). In the guidelines, WHO underscores that antenatal care provides an essential platform for crucial health-care functions within the continuum of care, which combines health promotion, diagnosis and treatment, and disease prevention. The recommendations outline a core package of evidence-based interventions that WHO recommends ensuring positive experiences and health outcomes during pregnancy. The guidelines contain several recommendations to improve maternal health and nutrition. Recommended interventions lie largely in two core groups: 1) recommendations for WRA, and the peri-conceptional period, and 2) recommendations for pregnant women. Only intermittent IFAS is strongly recommended as a public health intervention for menstruating women living in settings where anaemia is highly prevalent, to improve maternal and adolescent haemoglobin concentrations and iron status and to reduce the risk of anaemia. This recommendation targets adolescent girls and older women in settings where the prevalence of anaemia in non-pregnant women is 20 per cent or higher. For pregnant women, there are six core interventions that are currently strongly recommended by WHO to improve maternal health and pregnancy outcomes. Among those six interventions, two are recommended for all women, while the remaining are based on specific contexts. Dietary intervention through counselling on healthy eating and keeping physically active to stay healthy and prevent excessive weight gain during pregnancy, are both generally recommended. Also, daily oral IFAS is recommended to all women as part of antenatal care to reduce the risk of LBW, maternal anaemia and iron deficiency. Interventions recommended for specific contexts include intermittent IFA, vitamin A supplementation, calcium supplementation, and zinc supplementation. The recommended dosage for intermittent IFAS is 120 mg of elemental IFA: 2800 µg once per week for non-pregnant adolescents, pregnant adolescents

### Broad areas for recommendations on improving maternal health and nutrition

1

Recommendations for women of reproductive age, and the peri-conceptional period



2

Recommendations for pregnant women



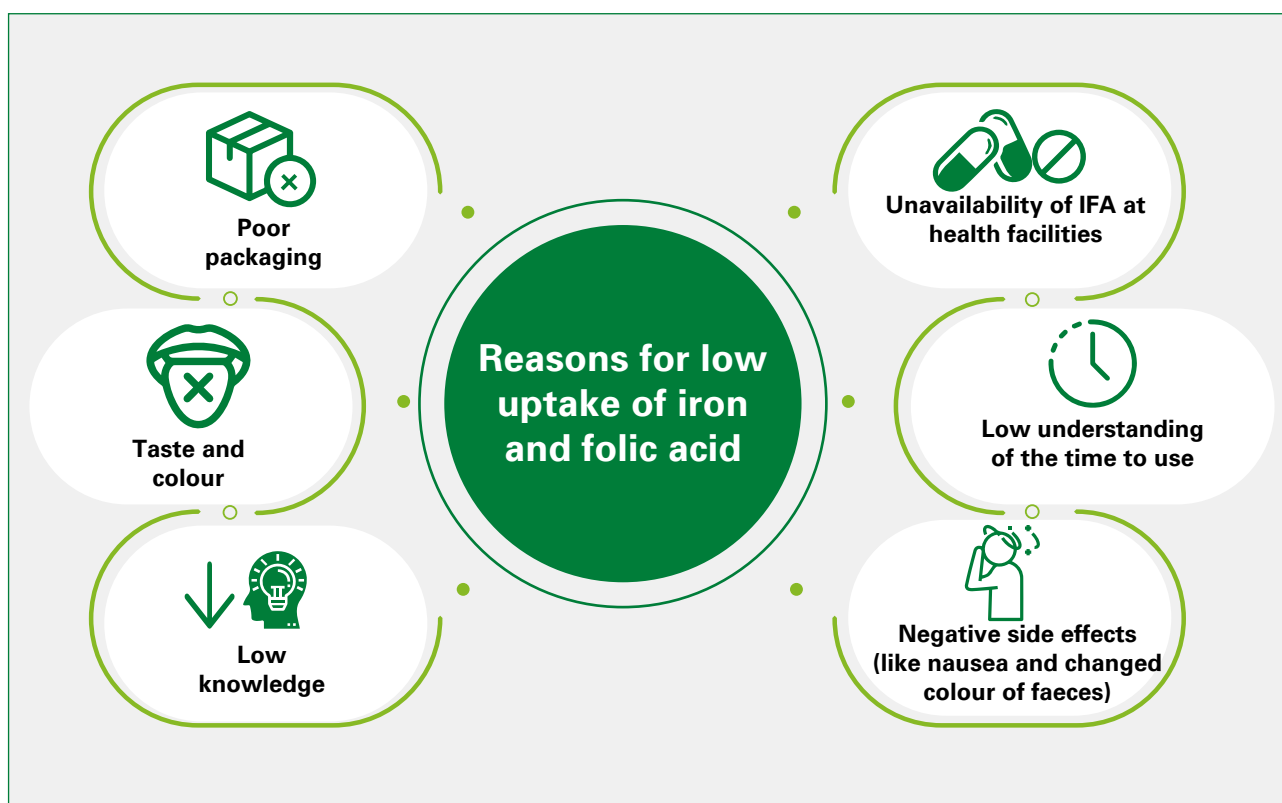
and older women in countries where the prevalence of anaemia among pregnant women is lower than 20 per cent. Vitamin A supplementation in pregnant women is only recommended in areas where there is a severe public health problem related to vitamin A deficiency. The rationale of this recommendation is that vitamin A supplementation during pregnancy prevents night blindness. Calcium supplementation for pregnant women is recommended in areas where dietary calcium intake is low and for women at high risk of developing hypertensive disorders during pregnancy. It is indicated that calcium supplements may reduce the chances of developing pre-eclampsia, especially in high-risk women, as well as those who do not include enough calcium in their diet. Zinc supplementation and MMS supplementation are recommended for pregnant women only in the context of rigorous research. Apart from context-specific recommendations, there are some interventions that are not recommended during pregnancy but are considered to improve maternal and perinatal outcomes, such as MMS, vitamin B6 (pyridoxine) supplements, vitamin E and C supplements, and vitamin D.

### 1.1.1 Current status of adolescent and maternal nutrition programme

The 2016–2021 National Multisectoral Nutrition Action Plan (NMNAP) guides the implementation of maternal and child nutrition interventions in Tanzania. The NMNAP is an evidence-based, costed action plan that is aligned with the global nutrition objectives stated by the World Health Assembly and the Sustainable Development Goals (SDGs). One of the main NMNAP targets is to reduce the prevalence of stunting in Tanzania from 34 per cent in 2015/16 to 28 per cent by 2020/21.

The NMNAP currently focuses on interventions targeted to improve the health and nutrition status of under-five children. Even though policies and delivery systems exist to reach pregnant women with counselling, IFA, and deworming medication, the provision of adolescent and maternal nutrition services has received less attention as compared to services targeting under-five children. Currently, 98 per cent of women receive antenatal care from a skilled provider and 51 per cent have four or more ANC visits as recommended. Furthermore, 27 per cent of pregnant women used IFA during pregnancy (National BNA report, 2017), and only 21 per cent used 90+ tablets of IFA (TDHS, 2016). The low uptake of IFA has been attributed to several reasons, including poor packaging, taste, colour, low knowledge, unavailability of IFA tablets in health facilities, low understanding of when to use IFA supplements, and its negative side effects including nausea and the changed colour of faeces (Lyoba et al., 2020). These factors were mentioned from a study conducted in Kigoma and might not specifically reflect the barriers in other places.

A growing body of evidence has shown that the provision of MMS to pregnant women can reduce the prevalent micronutrient deficiencies and improve maternal health and unintended pregnancy outcomes including reducing the risk of stillbirth, very low birth weight (very LBW), LBW, early preterm birth, preterm birth and SGA. To incorporate and scale-up the provision of MMS to pregnant women and adolescents, requires a clear understanding of the barriers and enablers that could support or impede the effective delivery of supplementation among these groups.



Despite the current shortfalls in programme delivery, the NMNAP (2016–2021) provides an opening for increased attention to the delivery of nutrition interventions to women and adolescents on an extended scale. Tanzania is also developing national Anaemia Prevention and Control Guidelines along with training manuals, SBCC materials, and job aids for health service providers and CHWs. These tools and guidelines that are being developed with support from developmental partners – including UNICEF – may offer opportunities for the integration of interventions on MMS delivery to pregnant women. Before the introduction of MMS, there is a clear need to document the barriers to the use of health services and IFA supplements and ensure that these factors are considered when implementing both MMS and IFA supplementation. The findings and recommendations of this project will be used to assist the relevant authorities in making decisions on scaling-up of the renewed and comprehensive maternal and adolescent nutrition programme in Tanzania, and inform the development of the maternal nutrition component of the NMNAP II (2021–2025) by 2020.

## 1.2 Study objectives

### 1.2.1 General objective

To analyse the existing barriers to access quality adolescent and maternal nutrition and health services, including MMS and IFA services, in the Mbeya region.

## 1.2.2 Specific objectives

1. To explore the barriers to the optimal utilization of adolescent and maternal nutrition and health services in the Mbeya region in Tanzania
2. To assess compliance to national guidelines on the provision of adolescent and maternal nutrition and health services in health facilities
3. To determine the level of satisfaction and perception of the current maternal and health services in the Mbeya region among pregnant women and providers

## 1.2.3 Research questions

1. What are the key barriers to the provision of quality antenatal care for pregnant women in Mbeya?
2. What are the key barriers to pregnant women's compliance with IFAS/MMS and what are the key actions that should be implemented to improve it?
3. What existing strategies do pregnant women already use to comply with prenatal supplementation guidelines?

# METHODOLOGY

## 2.1 Study design

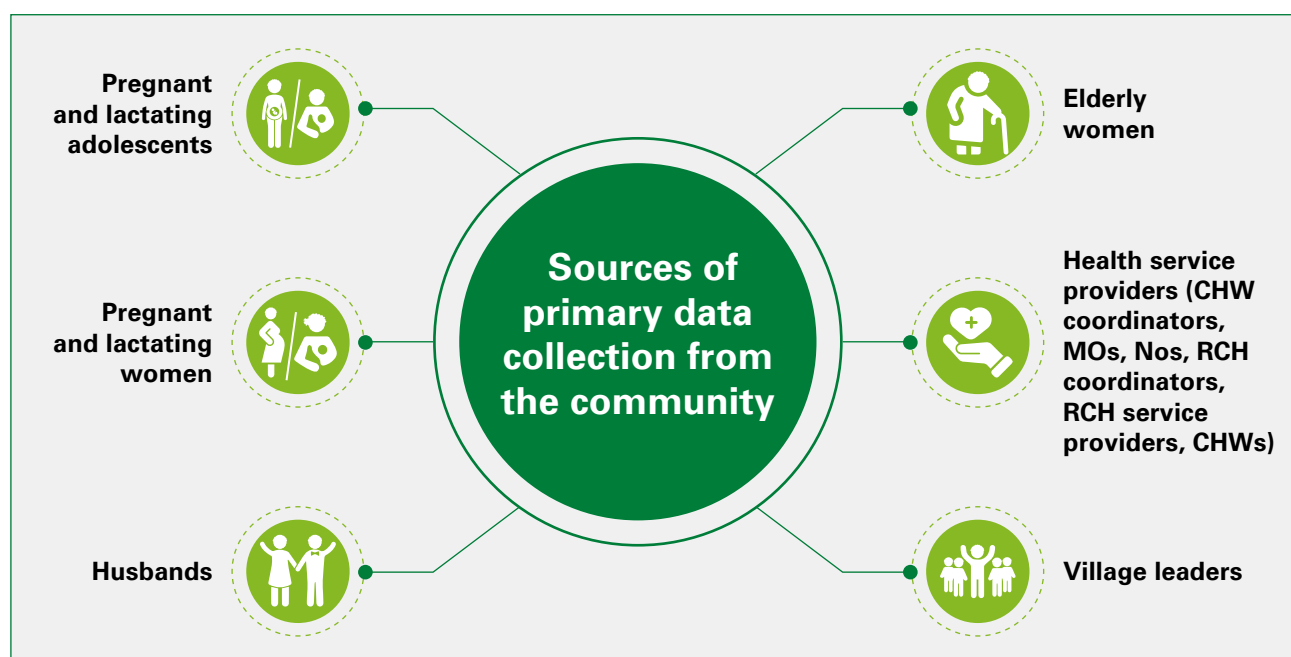
The study employed a qualitative design utilizing several methods including grounded theory and phenomenology. Phenomenology theory was chosen because this study involved people with lived experience on the topics of interest, i.e., pregnant women and adolescents. The grounded theory was also selected because theories pertaining to the behaviours around maternal and adolescent use of health services have been generated based on the obtained results.

## 2.2 Setting

Qualitative primary data were collected in the Mbeya region. Data were collected in four out of six districts in the region, which included Mbarali, Busekelo, Mbeya DC, and Kyela. The districts were selected by the regional team to cover urban and rural demographic and socioeconomic disparities and to allow comparison between the adherence to MMS versus the adherence to IFAS during midterm and final evaluations.

## 2.3 Target group(s)

The primary data were collected from selected community members, including pregnant and lactating adolescents, pregnant and lactating women, husbands, elderly women, village leaders as well as health



and health service providers including CHW coordinators, MOs in charge, NOs, RCH coordinators, RCH service providers and CHWs. The members were identified through consultations with the regional team and the CHWs.

## 2.4 Methods of data collection

IDIs, with key actors working on adolescent and maternal health and nutrition services at the regional and district levels in the Mbeya region, were used to gain a deeper understanding of the barriers that inhibited the use of nutrition and health services. FGDs with community members were also conducted to allow the triangulation of results. All FGDs and IDIs were audio-recorded using a tape recorder.

## 2.5 Sampling

Purposive sampling was used to select participants with the desired characteristics. FGD participants were selected and gathered in favourable places such as village offices or health facilities through the assistance of CHWs. Health workers and other officials were interviewed at their offices. Structured IDI and FGD guides were used to collect relevant information.

## 2.6 Data analysis

The recorded voice notes were transcribed and translated by trained research assistants. A qualitative approach, rooted in the principles of grounded theory, was applied. The transcribed data were coded based on themes identified during the FGDs and through an iterative exploration of the data. A line-by-line reading, and coding were conducted using NVIVO 12 software to identify the main and emerging themes while checking for consistency. The analysis was conducted using a framework grouping of relevant themes related to key issues outlined as per the study objectives and it was guided by the grounded theory approach.

# RESULTS

## 3.1 Participants and number of interviews conducted

The table below shows the number of FGDs and IDIs conducted per district. A total of 32 FGDs were conducted in four districts, with 8 FGDs being conducted per district. A total of 31 IDIs were also conducted with nutrition and health professionals at the regional and district levels.

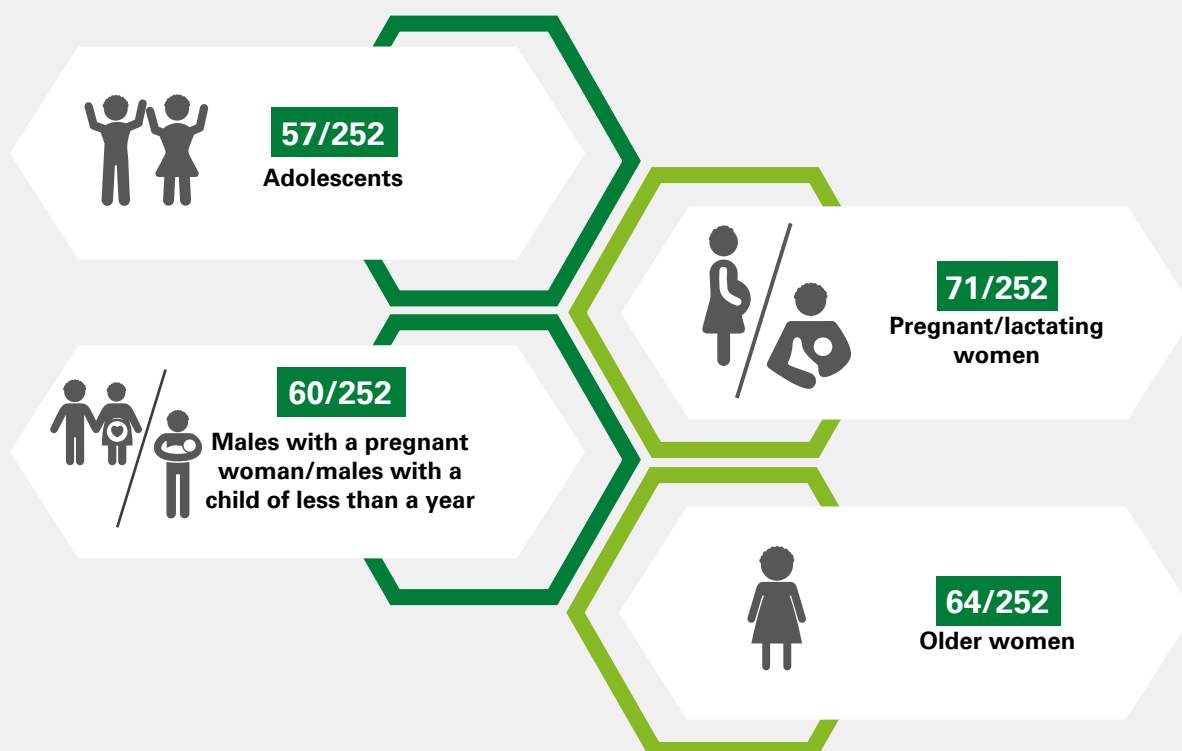
**Table 1:** Number of FGDs and IDIs conducted

| Type of interview session                                   | Busokelo DC | Kyela DC | Mbarali DC | Mbeya DC | Total |
|-------------------------------------------------------------|-------------|----------|------------|----------|-------|
| FGD – pregnant and lactating mothers                        | 2           | 2        | 2          | 2        | 8     |
| FGD – elderly women                                         | 2           | 2        | 2          | 2        | 8     |
| PFGD – fathers/husband                                      | 2           | 2        | 2          | 2        | 8     |
| FGD – pregnant and lactating adolescents                    | 2           | 2        | 2          | 2        | 8     |
| <b>Total</b>                                                |             |          |            |          | 32    |
| IDI (DRCHCo, DMO, DNuO, CHW2, RCH service provider and WEO) | 7           | 7        | 7          | 7        | 28    |
| IDI at the regional level (RRCHCo, RMO, and RNuO)           |             | 3        |            |          | 3     |
| <b>Total</b>                                                |             |          |            |          | 31    |

## 3.2 Demographic characteristics of the participants

Table 2 presents the characteristics of FGD participants. A total of 252 people participated in this study. Many respondents came from Mbarali (71), and the least came from Kyela, DC (55). Out of the 252 participants, 57 were adolescents, 71 were pregnant/lactating women, 60 were male spouses of a pregnant woman or males who had a child aged less than one year and 64 were older women. Across all districts, the number of pregnant/lactating women was higher as compared to other groups. Over a quarter (38 per cent) of the respondents fell into the age category of 26–49 years. More than half (64.7 per cent) of the respondents had a primary education level. Mbarali and Mbeya DC had more

## Categories of the 252 participants



respondents with secondary education levels (23.9 per cent and 27.1 per cent, respectively) than the other councils. Mbeya DC had both a higher percentage of participants with a secondary education level, and participants who had never attended a school at all (27.1 per cent). Most of the respondents in all districts practised both agriculture and livestock rearing as their source of income. However, Mbeya DC had a higher number of participants doing business than the other districts.

**Table 2:** Demographic characteristics of FGD participants

|                              | BUSOKELO DC (N= 57) |      | KYELA DC (N= 54) |      | MBARALI DC (N= 71) |      | MBEYA DC (N=70) |      | TOTAL (N= 252) |      |
|------------------------------|---------------------|------|------------------|------|--------------------|------|-----------------|------|----------------|------|
|                              | n                   | %    | n                | %    | n                  | %    | n               | %    | n              | %    |
| Interviewed groups           |                     |      |                  |      |                    |      |                 |      |                |      |
| Adolescents                  | 14                  | 24.6 | 11               | 20.4 | 12                 | 16.9 | 20              | 28.6 | 57             | 22.6 |
| Pregnant and lactating women | 17                  | 29.8 | 15               | 27.8 | 17                 | 23.9 | 22              | 31.4 | 71             | 28.2 |
| Husbands/fathers             | 12                  | 21.1 | 13               | 24.1 | 22                 | 31.0 | 13              | 18.6 | 60             | 23.8 |

|                       | BUSOKELO<br>DC (N= 57) |      | KYELA DC<br>(N= 54) |      | MBARALI<br>DC (N= 71) |      | MBEYA DC<br>(N=70) |      | TOTAL<br>(N= 252) |      |
|-----------------------|------------------------|------|---------------------|------|-----------------------|------|--------------------|------|-------------------|------|
| Elderly women         | 14                     | 24.6 | 15                  | 27.8 | 20                    | 28.2 | 15                 | 21.4 | 64                | 25.4 |
| Age distribution      |                        |      |                     |      |                       |      |                    |      |                   |      |
| 16 –25                | 21                     | 36.8 | 13                  | 24.1 | 23                    | 32.4 | 26                 | 37.1 | 83                | 32.9 |
| 26–49                 | 22                     | 38.6 | 24                  | 44.4 | 22                    | 31.0 | 28                 | 40.0 | 96                | 38.1 |
| ≥50                   | 14                     | 24.6 | 17                  | 31.5 | 26                    | 36.6 | 16                 | 22.9 | 73                | 29.0 |
| Education level       |                        |      |                     |      |                       |      |                    |      |                   |      |
| Standard seven        | 46                     | 80.7 | 47                  | 87.0 | 41                    | 57.7 | 29                 | 41.4 | 163               | 64.7 |
| Secondary school      | 6                      | 10.5 | 4                   | 7.4  | 17                    | 23.9 | 19                 | 27.1 | 46                | 18.3 |
| University            | 1                      | 1.8  | 0                   | 0    | 0                     | 0    | 3                  | 4.3  | 4                 | 1.6  |
| Never attended school | 4                      | 7.0  | 3                   | 5.6  | 13                    | 18.3 | 19                 | 27.1 | 39                | 15.5 |
| Marital status        |                        |      |                     |      |                       |      |                    |      |                   |      |
| Single                | 9                      | 15.8 | 10                  | 18.5 | 16                    | 22.5 | 19                 | 27.1 | 54                | 21.4 |
| Married               | 44                     | 77.2 | 33                  | 61.1 | 50                    | 70.4 | 47                 | 67.1 | 174               | 69.0 |
| Widow/widower         | 4                      | 7.0  | 11                  | 20.4 | 5                     | 7.0  | 4                  | 5.7  | 24                | 9.5  |
| Economic activities   |                        |      |                     |      |                       |      |                    |      |                   |      |
| Agriculture           | 1                      | 1.8  | 1                   | 1.9  | 18                    | 25.4 | 10                 | 14.3 | 30                | 11.9 |
| Agriculture/livestock | 54                     | 94.7 | 44                  | 81.5 | 36                    | 50.7 | 31                 | 44.3 | 165               | 65.5 |
| Business              | 1                      | 1.8  | 9                   | 16.7 | 2                     | 2.8  | 19                 | 27.1 | 31                | 12.3 |
| Agriculture/business  | 0                      | 0    | 0                   | 0    | 1                     | 1.4  | 0                  | 0    | 1                 | 0.4  |
| Employed              | 0                      | 0    | 0                   | 0    | 1                     | 1.4  | 2                  | 2.9  | 3                 | 1.2  |
| Housewife             | 1                      | 1.8  | 0                   | 0    | 13                    | 18.3 | 8                  | 11.4 | 22                | 8.7  |

## 3.3 Respondents' views about the nutrition status of adolescents and women

### 3.3.1 Nutrition status of adolescents

Adolescence is a critical period of growth and development that requires increased nutrient intake and greater attention to eating habits. During the interviews, participants said that the nutritional status of adolescents was not good. The majority mentioned that underweight, overweight, and anaemia were prevalent in adolescents: ***"They are underweight, maybe it is because they lack enough food"*** (Mbeya DC, Ilembo, pregnant adolescents). Another added: ***"Some are underweight, some are overweight, and others have average, it is the same as with the children"*** (Mbeya DC, Mageuzi Mbalizi, IDI, and CHW). In Busokelo, the community pointed out that some adolescents were underweight because of alcoholism: ***"The status of adolescents is poor because there are adolescents who drink a lot of alcohol, they don't exercise or be productive in the community"*** (Mbeya, Busokole, Ikamambade, pregnant and lactating women). The Deputy Chairperson in Mbarali reported that: ***"It is not that good because the majority don't eat a balanced diet even though healthy food is available. Adolescents choose to eat chips instead of eating food such as maize coming from the cultivated crops"***.

### 3.3.2 Nutrition status of women

Most of the interviewed women and other groups viewed women as having two forms of malnutrition. Overweight or obesity, and anaemia, were the forms of malnutrition reported to exist in the Mbeya region but underweight was not mentioned by the participants. The NOs and District Medical Officers (DMOs) from Mbeya reported that: ***"There is a challenge regarding women's nutrition status, some are overweight, some are obese, and some are anaemic as well. It's becoming a big challenge"***. District Nutrition Officers (DNuOs) in Busokelo also reported that: ***"Many are fine and normal compared to the underweight and obese group"***. A CHW in Luteba added that: ***"A low percentage have problems, but children have more challenges"***. As this is an area with many water bodies, high humidity and hot weather, the prevalence of underweight women could mainly be attributed to malaria infection. As described: ***"In our district, the majority of women have a good nutrition status but because our district is exposed to mosquitos and high temperature, some are underweight due to malaria and a few are overweight"*** Mbeya, Busokelo, Deputy DMO-IDI).

## 3.4 Challenges in improving the nutrition status of adolescents and women

The following are some of the reported challenges that adolescents and women face in trying to improve their nutrition status:



### 3.4.1 Knowledge of food preparation

Mbeya is among the country's food basket areas. It is a major producer of rice, Irish potatoes, bananas, vegetables, and fruits. The land is fertile, allowing many varieties of crops to be grown. As said: ***"We have much food and our land is so rich in nutrients that you can plant anything, and it will grow very well"*** (Chairperson, Ndandalo Kyela). Despite having varieties of crops, most people lacked the proper knowledge on how to prepare a healthy meal: ***"Most of them, they can't prepare a healthy meal because they lack education. The majority cultivate their vegetables, tomatoes, and onions but they don't know how to prepare as needed and they end up selling them all"*** (Mbeya DC, Mbalizi, FGD, Men). This finding was emphasized by a CHW, who added: ***"Many people are not educated, for example, all the foods that we are teaching them about are available, but the problem comes because they do not know how to prepare the food to have a healthy meal"*** (Mbeya, Mbalizi, IDI, CHW). The pregnant women narrated how they cook: ***"When preparing our food, we cook vegetables and stiff porridge (Ugali) then we eat"*** (Kyela Kilasilo, FGD, pregnant woman). Pregnant and lactating adolescents volunteered to take practical training on how to prepare healthy foods as they said: ***"We need to know how to diversify food and how to prepare healthy meals when we attend our clinics"*** (Kyela, Ndandalo, pregnant adolescent). However, a CHW in Luteba pointed out that there is an education gap: ***"Our ways of giving out education are very poor, we are not well-informed of everything and sometimes we cannot answer all the questions that mothers have"***. The DRCHCO in Busokelo elaborated that: ***"There are underweight and overweight problems. Women do not know how to prepare food to fit the specific nutrition situation. Some take a high level of carbohydrates while they are overweight"***.

### 3.4.1.1 Eating habits

Health workers were well-informed, that dietary intake influences the nutrition status of an individual and that healthy eating patterns promote good health and growth and prevent diseases. However, they acknowledged poor eating habits among adolescents and women in Mbeya as reported by the Assistant RCH Coordinator: ***“There are some who don’t eat as supposed because they eat what they produce. Let’s say someone produces maize, they will eat stiffed porridge every day from morning to evening, meaning no food diversification”*** (Mbeya DC, Ilembo, Assistant RCH). The NO emphasized: ***“The challenge is still eating habits. The majority eat one type of food or two. They don’t diversify meals because of either time for preparation, availability, or costs”*** (Mbeya DC, D NO). DRCHCO also reports that: ***“We can’t say the nutrition status of adolescents is good because many of the adolescents’ focus don’t take care of their diet like they do for their business. They don’t use the time to eat properly or include all five food groups needed to make a complete meal”*** (Mbeya, Busokelo). A CHW in Luteba added: ***“In our area, many don’t adhere to proper ways of eating and other nutrition issues because of our environmental difficulties as it’s cold here”***.

### 3.4.1.2 Economic conditions

Economic condition was mentioned as a factor causing poor nutritional status among women and adolescents. Participants felt that affluent people eat nutritious food as compared to low-income families: ***“It depends on a person’s economic strength, the stable ones can get good nutritious food and three meals per day while others eat two meals or one meal per day. Most of the time, a poor person will have nutrition problems”*** (Mbeya DC, Mbalizi, pregnant and lactating woman). Another group of pregnant and lactating women in Mbarali also pointed out the issue of economic hardships: ***“Some have high incomes and others have low incomes that influences their ability to afford a healthy meal. The low-income earners can’t afford nutritious food because of their lower purchasing power”*** (Mbeya, Mbarali, Wimba). A group of spouses of pregnant women in Busokelo added: ***“It depends, there are some who can afford and others who can’t. That is why we are saying that we prepare food according to our budget”*** (Mbeya, Busokelo, Ikamambade). Low economic status led many to sell milk to ASAS: ***“In our district, we collect many litres of milk but we sell it to ASAS to get money which covers families’ expenses like school fees and other needs”*** (Mbeya, Busokelo, DRCHCO).

### 3.4.1.3 Lack of nutritional data and information

Participants highlighted that one way of improving the nutrition status of both adolescents and women is to have data describing their nutrition status and trends. Most of the respondents relied heavily on physical observations to determine the nutrition status of adolescents: ***“Our data captures the nutrition status of children under-five only, so we know the nutrition status of under-fives but not of adolescents. There is no indicator which can help me to monitor the nutrition status of adolescents”*** (Mbeya, Kyela, RCH, Ndandalo).

***“The nutrition status might be bad, but we don’t have data for adolescent nutrition status from our facilities. We don’t have a platform or a system that demands data on the nutrition status of adolescents”*** (Mbeya, Kyela, Ndandalo, DNU).

***“But I can say that their nutrition status is average because the most affected population is children and sometimes pregnant women because they are eating few selected food”*** (Mbalizi, IDI, DRCHCO).

***“On physical observation, they look good. But I can’t say much about it because I don’t have data showing whether they are underweight or overweight”*** (Mbeya, Busokelo, DNU).

#### 3.4.1.4 Unavailability of nutritious crops

During the interview, participants pointed out that even though Mbeya is among the leading regions in agricultural food production, the focus is on cash crops rather than on the production of nutritious food crops such as biofortified crops. In Mbeya DC, respondents mentioned yellow sweet potatoes as one of the biofortified crops purchased in Songwe. Simultaneously, in Kyela, a few residents cultivated a small quantity of yellow potatoes and yellow corn as they are not cash crops: ***“Yeah, yellow sweet potatoes and corn are available in our community but only a few farmers are cultivating such crops”*** (Mbalizi, FGD, spouse of pregnant woman). The DNUO added: ***“The truth is, knowledge on biofortified food is low. They are not popular food among this community. Many don’t know the importance of biofortified food”*** (Kyela, Ndandalo, DNUO).

The deputy chairperson in Ikamambade reported: ***“I heard about the training to be conducted by the district agriculture officer about biodiversification. However, in my ward, none of the villages has started the training and cultivation of those foods although other wards have started to cultivate”*** (Mbeya, Busokelo, Deputy Chairperson). The Deputy Chairperson in Luteba also added: ***“We don’t have yellow potatoes in our area”***. The DNUO in Mbarali summarized the situation, saying: ***“In our districts, we have yellow potatoes and yellow maize but not all communities cultivate these. We will keep on educating them through the agriculture department”***.

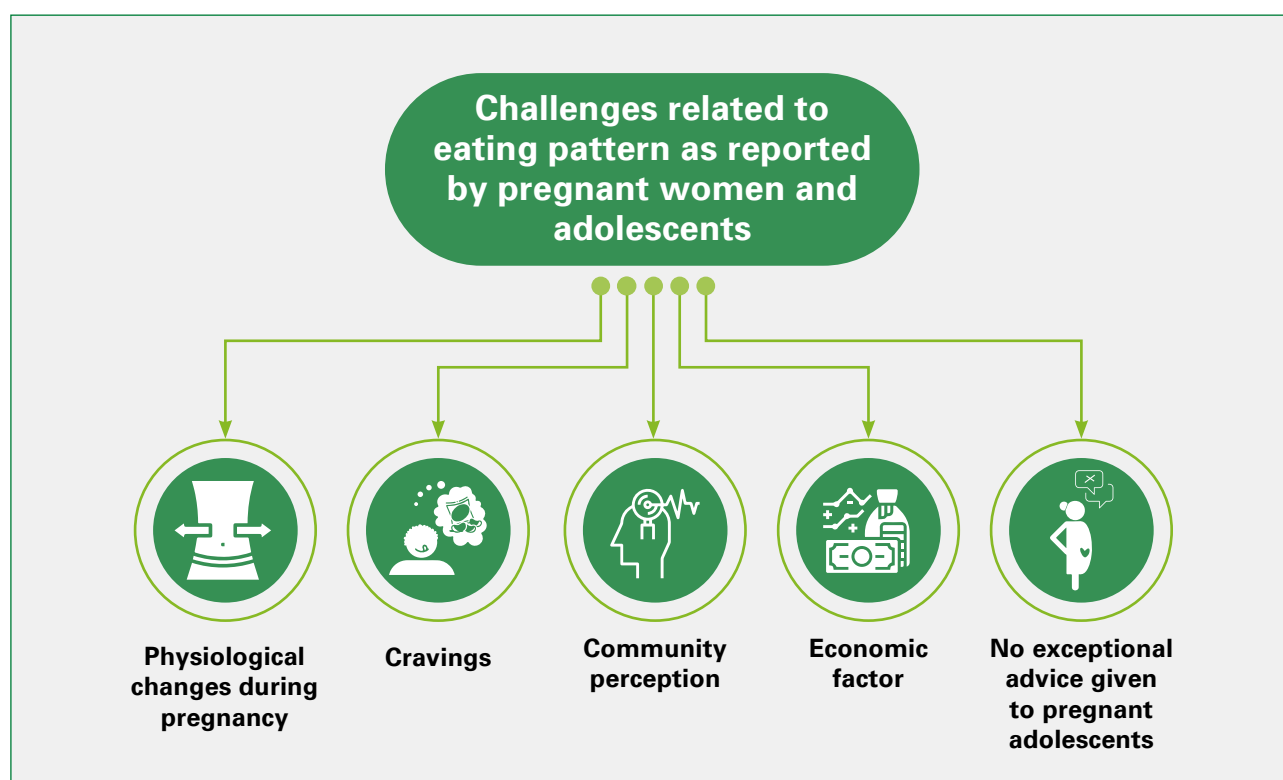
#### 3.4.1.5 Preference and costs of nutritious products

In some areas, respondents claimed not to use all type of cooking oils because they have preference of oil (i.e., palm oil) which they can afford. The finding was mostly presented by CHWs who noted: ***“We like using our palm oil and we don’t buy other cooking oils because we cannot afford them”*** (CHWs, Kyela, Ndandalo). Many respondents also complained about the cost of some foods, especially fish and milk. The women said that these products were too expensive for the families to afford: ***“Let us just say this, the cost of some foods that are not produced here are too expensive, this makes us fail to buy them and prepare healthy meals”*** (Ilembo, FGD, pregnant women). A DNUO in Mbarali reported that: ***“A few communities cultivate sunflower, filter sunflower oil and make use of the product; however, urban communities benefit more from these products”***.

## 3.5 Dietary intake by pregnant women

Dietary intake during pregnancy is an important component for a positive pregnancy outcome. Due to its importance, advice, and counselling on food intake during pregnancy is one of the services provided during ANC visits. Key informants from all districts reported advising women to eat an adequate diet that includes all five food groups such as grains, roots, and tubers; legumes and animal protein sources; fruits; vegetables; and sugar and oil. Despite the education provided to pregnant women during their ANC visits, they reported eating the same food that is consumed by the rest of the family members. Most of the food consumed was staple food including stiff porridge, rice and a small quantity of vegetables and beans. No one reported taking the diversified foods. Several factors were indicated as barriers to pregnant women taking adequate diets.

### 3.5.1 Challenges related to the eating pattern reported by pregnant women and adolescents



#### 3.5.1.1 Physiological changes during pregnancy

Generally, during pregnancy, a woman's body goes through many physical and hormonal changes. Most pregnant women were said to be picky about what they eat, which limits dietary diversity: ***"We recommend our pregnant women to have diversified food, i.e., eat food from at least four food groups. However, the majority are too picky during pregnancy and hence eat less from the recommended food groups"*** (NO, Mbeya). A CHW in Mbalizi also added: ***"We advise them to use all five food groups, but they can't, the majority gets nausea"*** (CHW, Mbeya DC).

### 3.5.1.2 Cravings

Most of the participants reported that pregnant women in their community eat according to what they crave and not as per the advice provided: ***“It depends on the need of the pregnant woman”*** (Mbeya DC, CHW). This finding was also supported: ***“There is a habit where a pregnant woman starts to crave food such as stiff porridge and sardines despite being advised to eat healthy foods such as vegetables, fruits, and beans”*** (Kyela, Ndandalo, Assistant DRCHCO). It was also said that despite the cravings during pregnancy, the majority eat what is available at the household: ***“It seems that every woman eats according to her pregnancy but she will also end up eating what is available in her household”*** (Mbarali, deputy chairperson). The finding was confirmed by pregnant and lactating women who said: ***“The food they eat depends on the pregnancy, some love to eat omelets and chips, some eat rice with meats and some eat stiff porridge. It highly depends on what the pregnant woman craves”*** (Mbeya DC, Mageuzi, pregnant and lactating women).

### 3.5.1.3 Community perception

The community members believed that a pregnant woman needs to eat the same as other family members, meaning that no exception is needed. ***“Pregnant women should eat whatever is available in the household, no special food is needed”*** (Ilembo, pregnant women). The DNuO also shared: ***“In the community, people eat the food which is available”*** (Mbeya, Mbarali, DNuO).

### 3.5.1.4 Economic factor

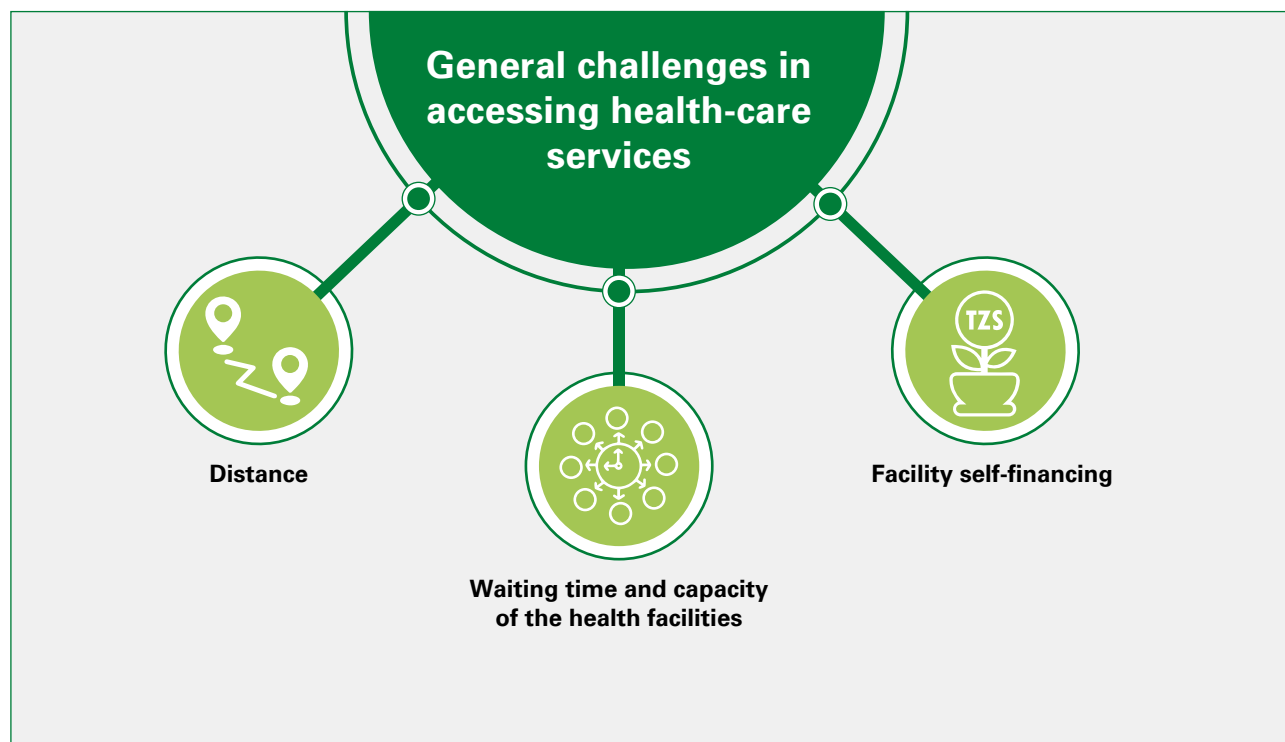
Pregnant women need to consume at least three meals per day, plus two or more snacks per day. This finding was prominent among DNuOs who said: ***“We advise them to take at least five meals per day, we can say three meals per day and snacks in-between.”*** However, the majority fail to do this because of their poor financial status. The same finding was reported by pregnant and lactating women: ***“It depends on your pocket. Some eat two meals and others five meals”*** (Mbeya DC, Mageuzi, pregnant and lactating women). However, a DRCHCO in Mbarali added that: ***“We advise them to eat what is locally available to reduce costs.”***

### 3.5.1.5 No exceptional advice was given to pregnant adolescents

Most adolescent pregnancies are unplanned, and when they are occurring at a younger age, cause increased nutrient demand. Despite this, most adolescents reported eating a diet often high in fat and calories. This is due to gaps in their knowledge as limited advice is available to them. ***“Adolescents have a low understanding but we try to insist that they eat healthy foods. The challenge is, they attend ANC very late and sometimes they don’t attend at all”*** (Mbeya DC, Mageuzi, CHW). The RCH Coordinator also said that no special assistance is provided to adolescents: ***“The advice we provide is the same advice given to older pregnant woman”*** (Kyela DC, Kilasilo, RCH).

## 3.6 General challenges in accessing health-care services

While some respondents alluded to the fact that it was easy to access health-care services, other respondents pointed out different factors that hindered them from accessing health-care facilities.



### 3.6.1 Distance

Access to health-care facilities varied among the respondents in all the settings. For some pregnant women, especially those living near the district town centre, access to health-care facilities was easier as compared to others who lived further away. In Kilasilo village, the RCH Coordinator mentioned that the village is surrounded by health facilities and it was easy for a pregnant woman to access health services. Women from Ndandalo village were also able to access health facilities easily. However, mothers pointed out that in some villages such as Mwala and Ilembo, access to health facilities was difficult: ***“Many are coming from remote villages such as Mwala and Ilembo. It takes three hours to get to the facility”*** (Mbeya DC, Ilembo, pregnant and lactating women). Another added: ***“In urban areas, access to health facilities is easy, but in rural areas such as Ilembo, there is a problem in accessing health facilities”*** (Mbeya DC, Mageuzi, a spouse of pregnant woman).

Respondents in Busokelo and Mbarali mentioned distance as a challenge to accessing health facilities: ***“We have one facility to cover all the villages. There are some villages located far from the facility, it takes a long time for a woman to reach the facility because of the distance. Besides, some areas require a woman to hire a motorcycle to reach the hospital”*** (Deputy Chairperson, Ikamambade, Busokelo).

He also added: ***“There is one area known as Mbisa located in the mountains and there are no roads. It becomes a challenge for the pregnant woman to reach the facility, especially during rainy seasons when neither motorcycle nor a car can reach”***

Similarly, in Luteba, the group of pregnant and lactating women pointed out: ***“We all depend on one ward health facility here in Luteba. Some stay far away from the facility, so it costs some money to reach the facility”*** (Mbeya, Luteba, pregnant and lactating women). The finding was confirmed by the DNUO who said: ***“It depends on where someone stays because we have two villages located far from the facility. They have to travel almost four to five kilometers to reach the facility”*** (Mbeya, Busokelo, DNUO).

In Mbarali, the DNUO said: ***“We have an inadequate number of health facilities. The ones available are located far from where people stay, it becomes a challenge. If we had health facilities nearby, then we could manage to improve our health”*** (Mbeya, Mbarali, DNUO).

### 3.6.2 Waiting time and capacity of the health facilities

Some respondents mentioned long waiting hours for the services as a challenge that limits pregnant women's access to health facilities: ***“The challenges that we face is the distance to the facility but when we are there, we wait for so long to get services, this is another major challenge”*** (Mbeya DC, CHW). Lack of necessary equipment was also highlighted as a limiting factor: ***“In Mbeya DC, some health facilities do not have enough bed-rest services, so even when we are in pain, we still have to go back home”*** (Mbeya DC, Mbalizi, village chairperson). This finding was elaborated upon: ***“Sometimes the patient requires an operation, but the facility is incapable of doing it and so the patient is transferred to other facilities. This may risk her life”*** (Mbeya DC, DNUO).

Another challenge that was mentioned was the inadequacy of human resources health facilities are facing in Busokelo: ***“We have only a few health workers, some facilities have a small number of workers to cover the facility work and outreach services”*** (Mbeya, Busokelo, DMO). The RCH Coordinator in Ikamambande also mentioned a similar challenge: ***“We have an inadequate number of health workers”*** (Mbeya, Busokelo, Ikamambande).

Another factor mentioned was: ***“Lack of a separate building to serve adolescents, so they are mixed up with older women”*** (Mbeya, Busokelo, DRCHCO). He also added that there was a lack of funds to finance outreach services. Pregnant and lactating women group and a group of elderly women also confirmed the inadequacy of health workers and raised the issue of periodic shortages of medicines: ***“We have challenges regarding the number of health workers, but sometimes there is also a problem of inadequate medicines”*** (Mbeya, Busokelo, Luteba, pregnant and lactating women). Another group added: ***“It is easy to get to the hospital, but after the screening, they ask you to buy your own medicine”*** (Mbeya, Busokelo, Ikamambande, elder women). In Busokelo, some tests cannot be performed during ANC visits: ***“Sometimes a pregnant woman might go to the hospital and be told that we can't do malaria test today, you need to go to the other hospital or pharmacy”*** (Mbeya, Busokelo, Luteba, CHW). Another challenge pointed out in Busokelo was the lack of ambulances: ***“We have only a few ambulances, so sometimes we are forced to use motorcycles”*** (Mbeya, Busokelo, Ikamambande, CHW).

### 3.6.3 Facility self-financing

As explained by the DNuO in Busokelo, currently, health-care facilities need to stand as independent facilities and adopt a Direct Health Facility Financing (DHFF) system, which means that facilities need to buy equipment and drugs. This finding was well explained by the DNuOs and RCH Coordinators: ***“Delivery services need to be free of charge, but at the facility level, equipment availability is a challenge, and sometimes women are requested to purchase gloves and delivery kits. However, this only happens when these supplies are not available at the facility. The challenge is that we have limited budget from our own source, and we have many competing priorities.”***

## 3.7 Antenatal health services offered to pregnant women and adolescents

### 3.7.1 Service offered to pregnant women

ANC is the service offered to mothers and unborn babies during pregnancy to prevent, detect, and treat risk factors early. All respondents mentioned that ANC services were provided, including check-ups to rule out some diseases, nutrition education, deworming drugs, anti-malaria drugs, IFA, weight measurement, and bed net distribution for malaria control: ***“There are many services offered, including general investigation, weight, urine, malaria, STDs, anaemia and HIV testing, and the provision of IFA supplements. There is also education on nutrition and on developing an individual birth preparedness plan”*** (DMO, Mbeya DC).

Another respondent added: ***“A lot of services are offered to pregnant women such as counselling, health examination including HIV, STIs, and haemoglobin content. Also, pregnant women are given iron and folic acid medicines, sulfadoxine-pyrimethamine (SP), Mebendazole, and TT”*** (Mbeya, Busokelo, Ikamambande, RCH Service Provider, IDI, 25-11-2020).

Another health professional reported: ***“When a pregnant woman starts an ANC visit, we must check everything. Professionally, we call it an assessment. You examine a pregnant woman from the head to the feet. You screen for anaemia, take weight measurements, and blood pressure (BP) to know if a pregnant woman has a BP problem. Then you give the vaccine, the malaria prophylaxis tablet and a tablet to prevent worms, depending on the pregnant woman’s age, but they should also be given enough education on how to eat. Besides this, you should ask the woman to explain what she has been told during the service to know if she has understood”*** (Mbeya, Mbarali DC, DRCHCO).

Apart from key informants, community members including women also explained the availability and accessibility of antenatal services in their areas. The group of pregnant and lactating women in Mbalizi said that: ***“We are getting IFA, anti-malaria drugs (SP), nutrition education, mosquito nets, and deworming drugs”*** (Mbeya DC, Mageuzi, pregnant and lactating women). One participant from Busokelo DC also mentioned diagnosis as one of the services offered to pregnant women in Busokelo ANCs, which was also mentioned by the respondent from Mbeya DC, who added: ***“Counselling on***

***danger signs and on developing individual birth preparedness plans was another service offered at the ANC*** (Mbeya, Busokelo, Luteba, pregnant and lactating women, 26-11-2020). Fathers also knew about several services offered to pregnant women, including ***“Counselling, general assessment, and provision of IFAS and bed nets”*** (Mbarali, Wimba Maharo, husbands of pregnant and lactating women).

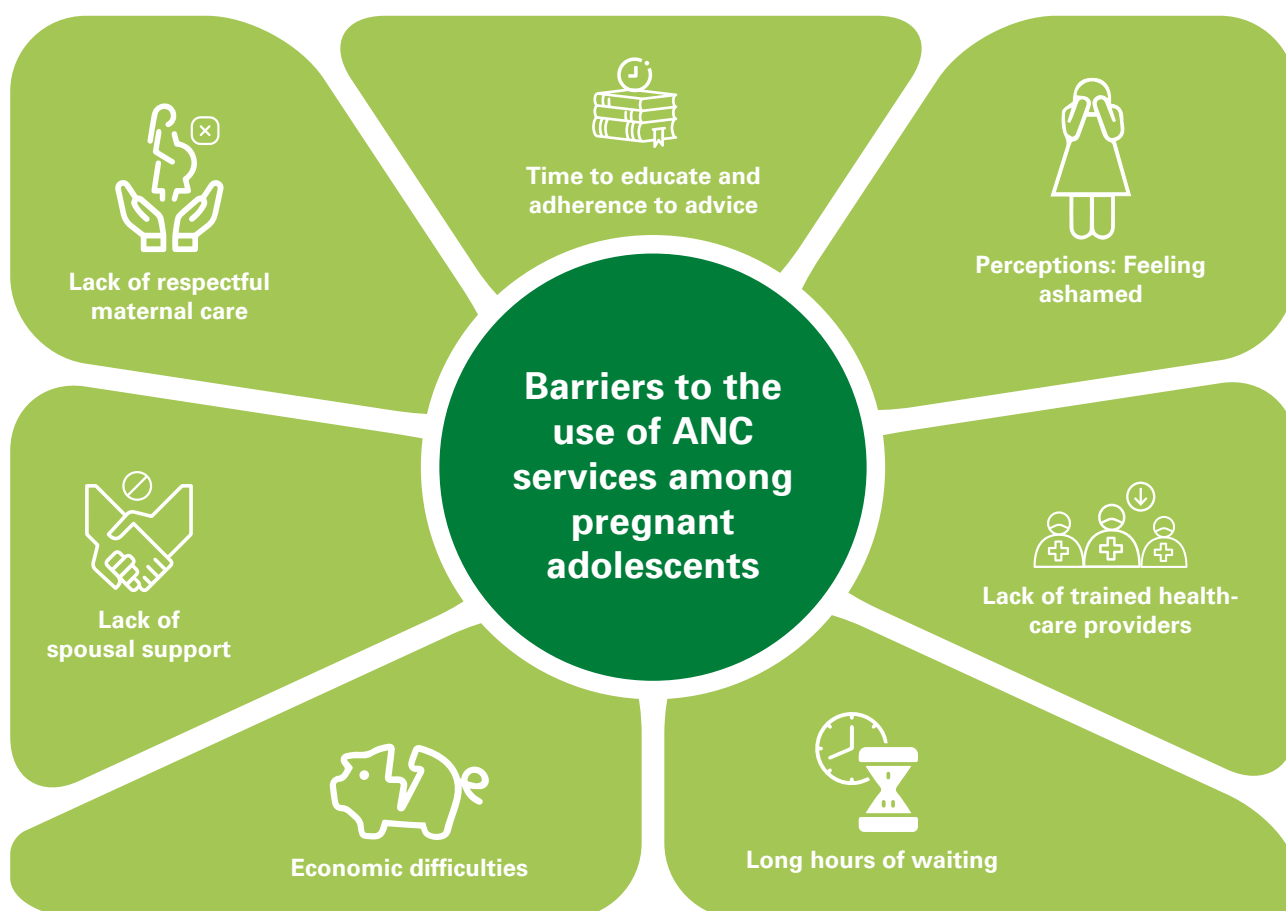
### 3.7.2 Services offered to pregnant adolescents

The health professionals interviewed specified that, the services offered to pregnant adolescents were similar to those offered to older pregnant women, including counselling on danger signs, caring for pregnancy and birth preparedness, anti-malaria drugs and mosquito nets for malaria prevention, FEFO, and a test for HIV. The only difference is that, pregnant adolescents were counselled to accept the condition of being pregnant and the need for an early ANC visit was emphasized. Pregnant adolescents were strongly counselled to give birth at a bigger health facility due to the possibility of delivery complications requiring caesarian section: ***“The services offered to pregnant adolescents are not different from the ones offered to older pregnant women. However, a pregnant adolescent gets counselling on how to accept herself”*** (Mbeya DC, Assistant DRCHCO). Also, it was elaborated that: ***“Pregnant adolescents are given special attention during delivery and the need for them to deliver at a facility with the capacity to undertake caesarian section is emphasized”*** (Mbeya DC, DMO). A majority of the adolescents were reported as giving birth through caesarian section: ***“A majority deliver through caesarian section because they have a small pelvis”*** (Mbeya, Busokelo, Luteba, CHW, IDI).

In Mbarali, Mbeya DC, and Busokelo respondents said that parents with pregnant adolescents were sometimes involved during counselling to settle disputes: ***“A pregnant adolescent needs more time during counselling. In case she feels uncomfortable because the parents might be furious, we advise them to come with their parents during the next visit so that we can settle the dispute”*** (Mbarali DC, DRCHCO).

Community members also emphasized: ***“Adolescents were advised to start clinic early and deliver at the facility to avoid complications”*** (Mbeya DC, Mbalizi and Ilembo, pregnant and lactating women).

## 3.8 Barriers to the use of ANC services among pregnant adolescents



Different factors were mentioned that affected the use of ANC services among pregnant adolescents.

### 3.8.1 Time to educate and adherence to advice

Interviewed participants reported that pregnant adolescents do not attend ANC willingly, i.e., a majority are forced to attend. Also, it requires much time to educate them, and they are less likely to adhere to the advice given: ***“The challenge is that we take a long time to educate them as compared to older pregnant women. They don’t pay attention to the teaching, and you have to take them through it slowly to aid understanding”*** (Mbarali DC, RCH). Again, most of them do not follow the advice from health-care providers: ***“The biggest challenge is that they don’t follow our advice. For example, when we advise them on the type of clothes to wear, a majority of them come back with tight clothes”*** (Kyela DC, RCH).

### 3.8.2 Perceptions: Feeling ashamed

The general community perceives pregnancy during adolescence to be shameful because adolescents usually don't have a partner. Being pregnant before marriage makes them feel embarrassed and uncomfortable in using the available ANC services. The finding was presented by a CHW in Mbeya: ***"Many of them are afraid to access the services because they feel embarrassed"*** (Mbeya DC, CHW). The CHW further explained, ***"It is uncomfortable for them to be in such areas and seen as being pregnant. They are afraid of being considered different because most of them are not married and are still studying."*** This finding was supported by the RCH in Ilembo, who added: ***"Many are afraid of what people will say about them. They decide to isolate themselves"*** (Mbeya DC, Ilembo, Deputy RCH). Also, the same barrier was reported in the Busokelo district: ***"Most of the time, adolescents aged below 18 years are afraid to start ANC visits early because they are not married. They also face difficulties when engaging their partners or husbands in the services. A majority have a delayed first ANC visit"*** (Mbeya, Busokelo, Luteba, CHW, IDI). It was said that even when adolescents are forced to attend the ANC, it is very hard for them to confide in the health service provider: ***"The age difference between an adolescent and a service provider might be a reason for not being free. A pregnant adolescent has no confidence to open up"*** (Mbeya, Busokelo, Ikamambande, DNUO, IDI, 30-11-2020).

### 3.8.3 Lack of trained health-care providers

Pregnant adolescents need special attention when they are provided health services. However, the lack of trained health-care providers is a challenge: ***"Lacking properly trained health-care providers who can offer services to pregnant adolescents is a challenge. This results in the incomplete provision of the packages meant for them"*** (Kyela DC, Ndandalo, DRCHCO). This challenge was also mentioned by the DMO: ***"A big challenge we have is the lack of well-trained personnel who can engage adolescents in health services. To offer quality services to adolescents, we must have enough personnel"*** (Mbeya DC, IDI, DMO).

### 3.8.4 Long hours of waiting

Some adolescents pointed out that when visiting the ANC, they wait for many hours before receiving service. During the FGD, one of the adolescents said: ***"We spend long hours waiting for services. We may get there around 9 a.m., and they tell you that you are late, and you have to wait for us to finish breakfast. We end up waiting until 1 p.m. or they may tell us to come the next day"*** (Mbeya DC, Mbalizi, pregnant and lactating adolescents).

### 3.8.5 Economic difficulties

Many adolescents are not economically stable and cannot take care of themselves. Most are dependent on their family members or parents. It becomes a burden for parents to take care of them and pay for health services. This finding was provided by RCH personnel who said: ***"In general, it is hard for them to follow the advice because they depend on their parents"*** (Kyela DC, Kilasilo, RCH).

Regarding paying for health services, the respondent narrated: ***“The services offered to pregnant adolescents are good but when it happens that an adolescent is confirmed to have syphilis, she must pay for the treatment. This has become a challenge as services for pregnant women should be free. Other services such as FEFO, SP and haemoglobin are free”*** (Mbeya, Kyela, IDI, RCH, Kyela Hospital).

### 3.8.6 Lack of spousal support

The fact that the adolescents are not married means that they lack their partner’s support. A majority fail to start ANC visits early and some do not attend at all. This finding was provided by a local chairperson who reported: ***“It is hard for them to bring their partners because most of them run away”*** (Mbeya DC, Mbalizi, local chairperson). Another respondent from Kyela DC said: ***“There is a challenge, since most adolescents are abandoned after becoming pregnant. You may find that the grandmother is the one bringing them to the ANC”*** (Mbeya, Kyela, Kilasilo, RCH, IDI). The same challenge was reported by elderly women in Mbarali: ***“As a mother, it hurts when your child says, I don’t know the father of this expected child, meaning you have to support your child and the grandchild”*** (Mbeya, Mbarali DC, Igurusi, elderly women). One of the adolescents said: ***“If you visit an ANC without your partner, you are dismissed or asked to pay 20,000 TSh”*** (Mbeya, Busokelo, FGD, pregnant and lactating adolescents, Ikamambande).

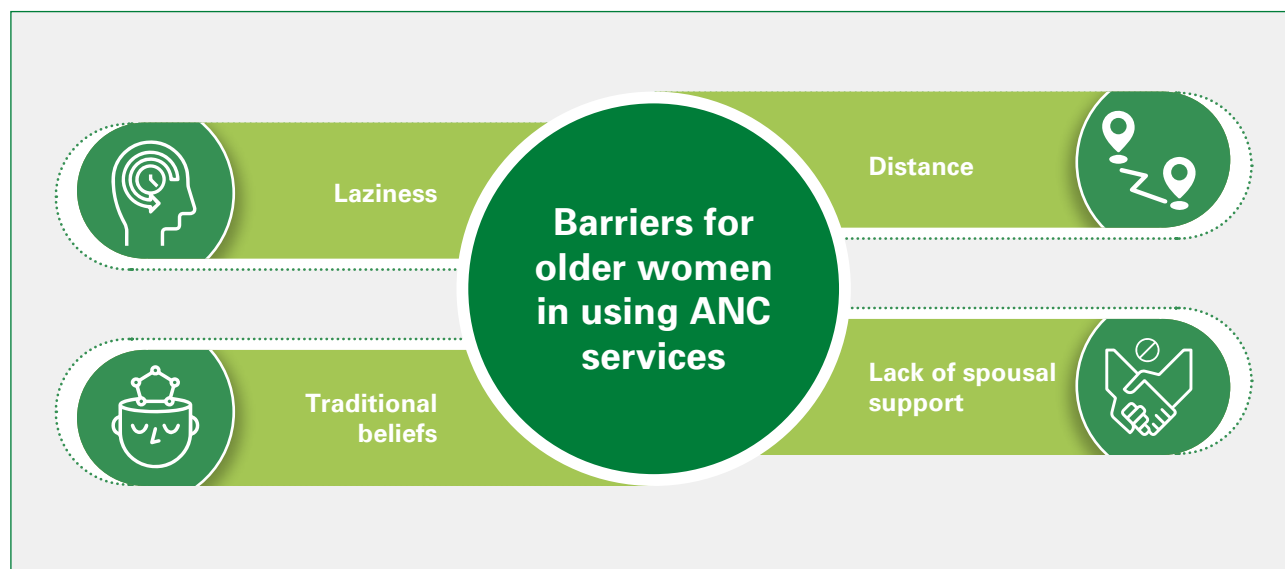
Although pregnant adolescents are required to attend the first ANC visit with their spouses/husbands, this is not essential. If a partner refuses or is not available, the pregnant adolescents are required to bring a letter from the local leader and submit it to a health worker to access the services. This process was reported to embarrass them even more. The DMO said: ***“Yes, we recommend a pregnant woman to make the first visit with her husband/spouse. If she doesn’t have a partner or the partner is unable to attend, they are supposed to take a letter of introduction from the village executive officer stating that the pregnant adolescent does not have a spouse or that the spouse has refused to accompany her, which brings more embarrassment”*** (Mbeya, DMO, IDI, DMO).

### 3.8.7 Lack of respectful maternal care

There was a complaint about mistreatment of pregnant adolescents when they visit the clinic. This finding was brought forward by a local chairperson in Mbalizi: ***“There is a lot of contempt coming from nurses when they offer services”*** (Mbeya DC, Mbalizi, local chairperson). On the other hand, even community members complained about mistreatment from health service providers. Health workers were accused of using harsh language with pregnant adolescents and other women when offering services. This made some women feel uncomfortable and withdraw from attending the next visit: ***“The nurses use harsh language when providing services to pregnant women and adolescents. They don’t care if it’s your first visit or whether you have attended for a long time. When nurses start interviewing pregnant women, they insult them. This makes women skip the subsequent visits due to poor treatment”*** (Mbeya DC, Mbalizi, Mageuzi, fathers, FGD).

## 3.9 Barriers for older women in using ANC services

It was observed that several factors influence the rate of ANC visits among older women. Some of these factors are like those reported by adolescents.



### 3.9.1 Distance

Most women mentioned distance as the cause of failure to attend all the required ANC visits. Distance was mentioned in all settings as a major factor to access to health-care services. A CHW in Lwangwa reported: ***"Our biggest challenge in accessing health-care services is due to the geographical location. Most of the areas are in the mountains which makes it harder to reach the facility, especially during the rainy season. Most pregnant women decide not to attend and show-up at the delivery time"*** Distance was also mentioned as a main factor for home-based deliveries. In Lwangwa, the CHWs and mothers explained: ***"Many pregnant women in Ikama and Mbigiri in Busokelo deliver at home because the health-care facilities are located very far. Most of the time, they would need to board transport and pay around 8000 TSh to reach a facility"*** (Mbarali DC, Igurusi, pregnant and lactating women, FGD).

### 3.9.2 Lack of spousal support

Some respondents reported that failure to start ANC visits early was due to poor support from spouses. The spouses were either busy or not willing to escort the pregnant women to the clinic. The problem was more pronounced among unmarried women or those who had affairs with married men. This finding was reported by one pregnant woman: ***"You may find that an unmarried woman or one who has had an affair with someone's husband starts ANC visits late, i.e., at five months or six months"*** (Mbeya DC, Mbalizi, pregnant and lactating woman).

### 3.9.3 Traditional beliefs

Another obstacle observed was traditional beliefs. According to the Nyakyusa tradition, pregnancy is a secret; a woman needs to hide the pregnancy until it starts showing. This finding was reported by a CHW in Mbeya DC who said: ***“To my understanding the majority of pregnant women say that, if they start ANC visits early, the public will know that they are pregnant and they might be bewitched. This makes them afraid to start attending the clinic early”.***

### 3.9.4 Laziness

Laziness is another common reason, especially from key informants. The majority reported that many pregnant women know the right time to start, but they ignore it and choose to start at their convenience. This finding was prominent among health professionals: ***“If you ask them, they will tell you that the reason for starting late ANC visits is to have a smaller number of visits because if they start early, they will have any number of visits. So, what we normally advise them is to complete all eight visits until delivery time”*** Another respondent said: ***“Some pregnant women intentionally start an ANC visit late to ensure they only make a total of four visits”*** (Mbeya, DNuO, IDI).

## 3.10 Reasons for low adherence to IFAS



### 3.10.1 Perception and knowledge about anaemia

The results yielded inconsistent findings regarding knowledge about anaemia. Overall, the FGD respondents had no comprehensive definition of anaemia. Pregnant and lactating women respondents defined anaemia as a low-level of blood in the human body: ***“From what I understand, anaemia means a low-level of blood”*** (Kyela, Ndandalo, FGD, pregnant and lactating women). In contrast, the key informants related anaemia with a specific blood level that pregnant women have. They all described that the blood level of a pregnant woman needs to be above 8.5, and less than that is considered as anaemia: ***“The person is considered anaemic if she has haemoglobin below 8.5”*** (Mbeya, RCH).

Spouses of pregnant and lactating women defined anaemia by presenting causative factors, i.e., low food intake. The respondents failed to specify the foods that are high in iron content: ***“It is like a lack of food or fruits, that is what I understand”*** (Kyela, Kilasilo, FGD, spouse of pregnant and lactating woman). However, a few pregnant and lactating women mention foods that if a person consumed inadequately vegetables, this could lead to anaemia: ***“Anaemia is caused by the insufficient consumption of foods such as vegetables, spinach, etc.”*** (Kyela, FGD, spouses of pregnant and lactating women).

All respondents were aware of the symptoms of anaemia experienced during pregnancy: ***“Symptoms of anaemia start with the paleness of both eyes and hands changing to a nearly pale-yellow colour. You may also experience dizziness and tiredness. These are symptoms of anaemia”*** (Mbalizi, Mageuzi, spouse of pregnant and lactating woman). Anaemia was also said to be caused by either a low food intake or worm infestation/infection. This finding was prominent among DRCHCO, DMO, and RCH in all settings: ***“It is either not paying attention to food or infestation such as worms”*** (Mbeya DC, Mageuzi, RCH). At the same time, DNuO related the cause of anaemia with low intake of IFA: ***“The other cause of anaemia is the inadequate use of IFA”*** (Kyela DNuO). Lesser intake of foods such as vegetables was commonly mentioned by all groups except one group of pregnant and lactating women, who cited menstruation as another cause of anaemia. The underlying and basic causes were not mentioned.

### 3.10.2 Perception about IFA

Mothers shared their perceptions about IFA. Most of the interviewed mothers acknowledged that IFAS is good for them as it helps in anaemia prevention and makes the child healthier. The following quotes indicate the varied thoughts that were presented: ***“IFAS increases blood in our body and should be taken daily”*** (Busekelo, Kibole, pregnant and lactating mothers, FGD). Another participant added: ***“The tablets increase blood besides vegetables that also contribute to an increase in blood. These tablets also strengthen the child’s body parts in-utero and after birth”*** (Busekelo, Luteba, pregnant and lactating mothers, FGD). Participants from Kyela added that, IFAS, besides preventing anaemia, also strengthens maternal and child bones: ***“Those red tablets are meant to increase blood during pregnancy and also to improve the mother and the child’s bones”*** (Kyela, Ndobo, FGD, 24-11-2020). In Igurusi village, mothers knew that IFAS makes the women strong, prevents illnesses, and builds the body: ***“Those red tablets make the mother strong which is necessary for her daily***

**work. They prevent illnesses and build her body”** (Mbarali DC, Ilgursi, FGD-pregnant and lactating mothers, 24-11-2020). Women from Mahango village in Mbarali emphasized that: **“Pregnant women are supposed to use IFAS because when giving birth they lose more blood. Besides tablets, they must eat vegetables and continue to use IFAS after delivery to replenish the lost blood”** (Mbarali DC, Mahango, FGD, pregnant and lactating mothers, 27-11-2020). One woman from Busekelo was able to point out that IFAS also prevents spina bifida, as she said: **“Those tablets help. Initially when you take them you feel bad, but they help to prevent a child from getting spina bifida”** (Busokelo, Ikamambande, FGD). One participant from Ndobo village knew that IFAS prevents deformity and blindness: **“If you are not using IFAS, the child might be born crippled or with blindness”** (Kyela-Ndobo, FGD, pregnant and lactating mother).

### 3.10.3 Availability of IFAS

During interviews, IFAS appeared to be accessible during pregnancy. The majority of interviewed women revealed that IFAS was available and was accessed from health facilities, including dispensaries and health centres, and was also provided free of cost. Most of the participants commented that IFAS was usually provided to pregnant women on the first day of the ANC visit: **“We receive IFAS from the health centres or dispensaries during the first ANC visit and continue to receive them during the second visit, even when you have the remaining tablets”** (Busokelo, Ikamambande, FGD, pregnant women). Despite being provided free at health facilities, stock outs were mentioned as a major challenge associated with access to IFAS. Another participant added: **“When I was registered for the first time at ANC, they did not provide me with IFAS, however, they provided me with IFAS during the second ANC visit because they were out of stock”** (Busokelo, Ikamambande, FGD, pregnant woman). This was also revealed during the discussion at Wimba village in Mbarali DC: **“When I was pregnant, they gave me IFAS in the first and the second ANC visits, however during the third visit, they told me to buy it from drug stores”** (Mbarali DC, Wimba, FGD, pregnant woman). In other villages, women opted by themselves to buy IFAS from drug stores when it was not available at health facilities. In Kyela, participants raised the issue of cost when taught to buy IFAS: **“IFAS costs TSh 2000 for a single blister, this is expensive for us”** (Kyela, Kilasilo, FGD, pregnant women).

### 3.10.4 Magnitude of IFAS consumption

Participants were asked whether women were using the IFA provided at health facilities. Nearly all health professionals, leaders, and a few other interviewees felt that mothers were using the IFAS provided: **“I think they use IFAS because a majority ask about red tablets at ANC visits. I believe if they are asking about the tablets, they are using them as well. It also implies that they understand the education provided about the importance of IFAS in the prevention of anaemia, spina bifida and improvement of child and maternal health”** (Mbeya, RCH).

**“I think a majority are using IFAS, but some are not using them”** (Mbeya DC, CHW, IDI).

***“If they are provided with IFAS at the health facility, they normally use them”*** (Mbeya, Kyela, Ward Executive, IDI). ***“I believe a majority who attend use the IFAS provided”*** (Mbeya, DC, Assistant, DRCHCO), IDI). ***“pregnant women are using these tablets because none of my children were born with any complications, I have three children and they are all normal and healthy”*** (Mbeya, Kyela, Kilasilo, FGD, men).

The response from pregnant and lactating mothers, adolescents, CHWs, and a few health workers indicated that pregnant women were not using the IFA provided, as advised.

***“To speak the truth, a majority are not using the supplements as advised. If you ask them straight questions, they will respond that they are using the supplements. However, if you use some tactics such as asking them how many supplements are remaining after the last visit, they respond ‘mmm I think I have around 20 tablets remaining’. When you ask them again, should I provide you with more tablets, they will say, not at the moment. This tells you clearly that they are not using the tablets. We need to continue educating them about the importance of using IFAS”*** (Mbeya, Assistant DRCHCO, IDI).

***“They don’t use these supplements. A majority remain with many tablets at the end of the month while they were supposed to finish them within that time. Some throw them away”*** (Mbeya DC, adolescents).

***“In my experience, a majority take the IFAS when visiting the health facility, but usually they throw them away before even reaching home. They complain about nausea when taking IFAS. We still encourage them to use IFAS”*** (Mbarali, CHW, IDI).

***“We don’t use them at all”*** (Mbeya DC, FGD, adolescents).

***“Normally we count only the IFAS tablets dispensed but the challenge is knowing if they use the tablets or not. However, we do provide them with education and since we do not see children with deformities, possibly they do use the IFAS”*** (Mbeya, DNuO, IDI).

***“I will be lying if I said that they are using or not using IFAS. It requires following each pregnant woman to know if they are using IFAS or not, that is too tedious. Imagine if every day you have to visit a household having a pregnant woman to find out if they are using the IFAS or not. That is challenging. We advise them to use it, that’s all”*** (Mbeya, Ward Executive Officer, IDI).

### 3.10.5 Side effects of using IFAS during pregnancy

Participants narrate side effects associated with using IFAS during pregnancy, which limits their use. Although there were different thoughts, the main side effect mentioned by almost all participants was nausea and vomiting. The nausea was said to be triggered by the smell of the drug rather than the colour or the shape. Several quotes reflected their thoughts:

***“The side effect is mainly due to smell, a large percentage complain that they have an awful smell which triggers nausea and so they decide not to use the supplement”*** (Mbeya, Kyela, DRCHCO, IDI).

***“A majority complain about nausea and dizziness”*** (Mbeya, Kyela, CHW, IDI, CHW).

***“These tablets are given when you’re pregnant. We normally eat vegetables and avoid using the supplements as they make us feel nauseous. Sometimes when you take it, you need to have a complete rest otherwise you feel dizzy”*** (MBEYA, Kyela, FGD, pregnant and lactating mothers).

***“These tablets do not look bad, but women complain that they make them feel uncomfortable and nauseous, and that sometimes the tablets make them vomit”*** (Mbeya, Kyela, men with pregnant women, FGD).

***“It’s not that they don’t want to use the IFAS tablets. It’s the effects the tablets bring – sometimes they vomit excessively, to the extent that they vomit bile acid”*** (Mbeya DC, men, FGD).

Males reported that women complain when using the IFAS tablets: ***“So some women complain, ‘oh I have nausea’, ‘oh when I take the tablets, I feel excessive hunger’. Some of these reasons are not even true because they don’t like taking the tablets”*** (Mbeya, Kyela, men, FGD).

***“They will always come into the facility with complaints saying, ‘nurse, these supplements make us vomit’ and some complain about dizziness. This is the reason why they don’t use them besides the periodic shortage we experience in the health facility”*** (Mbeya, DRCHCO, IDI).

***“Some say the IFAS tablets are annoying and have added no value while others say that they have enough blood and that alternative ways to increase blood are available to them. However, when they are well educated, they start using them”*** (Mbeya, NO, IDI).

Another NO added, ***“folic acid alone has no problem at all, the challenge comes when they use a mixture of folic acid and iron because the smell is really bad. This causes some women discomfort, especially nausea and sometimes black faeces”*** (Mbeya, DNuO, IDI).

Elderly women from Mbalizi reported that not all women experienced nausea and a few felt better when using IFAS: ***“Not all participants felt nausea, some pregnant women were relieved from nausea and dizziness after using IFAS”*** (Kyela, elderly women, FGD).

In some instances, additional advice was given to reduce the side effects: ***“Nurses advised pregnant women to return to the facility when experiencing any serious side effects”*** (Mbeya DC, elderly women, FGD). The health workers presented their views: ***“Indeed, they do complain about nausea. If there is a possibility, they should make a new IFAS that can be swallowed once for the whole month”*** (Mbeya, RCH, IDI). Adolescents said that they were advised to take the IFAS tablets before sleeping, to avoid the side effects: ***“These tablets cause nausea, we were advised to swallow them before sleeping”*** (Busokelo, FGD, pregnant and lactating adolescent mothers, FGD).

### 3.10.5 IFAS dosage during pregnancy

Consistent education is key when providing any service, including advice on the use of IFAS. During the interview, health professionals, ward/village leaders, caregivers, and mothers had varied information about the dosage to be used during pregnancy. These are some quotes from health professionals and leaders: ***“Ahhh, I don’t know how many tablets they are supposed to use, I know its many tablets, might be more than 30”*** (Mbeya, CHW, IDI).

***For a pregnant mother with normal haemoglobin, i.e., 11.5 mg/dl, they use one tablet daily. If they have haemoglobin concentration of around 8–11.5 mg/dl, they must use two tablets daily. They may swallow two tablets once or take one in the morning and another in the evening. Severe cases are managed in the hospital, but pregnant women can take even three tablets”*** (Mbeya, DRCHCO, IDI).

***“Ideally, if the pregnant woman is not anaemic, she is supposed to use one tablet of 200 mg daily until delivery and must continue to use IFAS until three months after delivery. If the woman is anaemic, she must use two tablets daily until the anaemia is corrected, then she should continue with the normal dose”*** (Mbeya, DMO-IDI).

***“The usage depends on whether the woman is anaemic or not”*** (Mbeya, Assistant DRCHCO, IDI).

***They say at least 90 tablets during pregnancy. If she can use IFAS beyond 90 days, it is great”*** (Mbeya, DNU, IDI).

***“Mhhhh, I think monthly they need to swallow 30 tablets, if she starts when she is 12 weeks pregnant, she will have six months to use IFAS, that is 30\*6, which is 180 tablets, let’s have approximate 200 tablets”*** (Mbeya, DNuO, IDI).

***“Aaah...there should be many tablets. Let us say someone with a low haemoglobin, less than 10 mg/dl, or up to 10.5, they should use one tablet in the morning and another in the evening for 30 days, so how much is that. For those with haemoglobin around 8.5, we give them two tablets daily and we must see them regularly to monitor their haemoglobin level. Those with normal haemoglobin, i.e., 10.5–12, take one tablet daily for 90 days”*** (Mbeya, Kyela, IDI, RCH, Kyela Hospital).

***“Some take two tablets daily, but I’m not sure why”*** (Mbeya, Kyela, Ikamba, Kilasilo, IDI, CHW, 20-11-2020).

***“It depends on the haemoglobin level. Some use 30 tablets while others use up to 90 tablets”*** (Mbeya, Kyela, KILASILO, RCH, IDI, 24-11-2020).

Mothers and adolescents knew that they were supposed to take one tablet daily but were not sure for how long: ***“We are supposed to take one tablet daily for the whole month”*** (Mbeya DC, Mageuzi, Mbalizi, pregnant mothers, FGD). However, another added: ***“They normally give us two sachets***

**and say, when you reach that line with red tablets, then you have finished the dose and that you should start another dose after that”** (Mbeya DC, Mageuzi, Mbalizi, pregnant mothers, FGD).

Elderly mothers and fathers also shared their thoughts: **“Those red tablets are given daily to increase blood, they swallow one in the morning and another at night”** (Mbeya, Kyela, Ikimba, Kilasilo, FGD, elderly women).

### 3.10.6 How to use IFA supplements

Many of FGD participants reported that they usually take the IFAS given at health facilities but do not use them as recommended due to the side effects. They reported that supplements were given for a one-month period, since pregnant women were given a monthly appointment. A few pregnant women were given IFAS tablets to cover a three-month period. A majority also knew that they were supposed to take one tablet daily but were given varied explanations about the ideal time to swallow the tablet: **“They said we should swallow one tablet every day, meaning that we may take it in the morning or the evening. What matters most is that you must take one tablet per day”** (Mbeya, Mbeyavijini, FGD, pregnant and lactating mothers).

**“They told us to eat before taking the tablet”** (Busokelo, Ikamambande, FGD).

**“I used two tablets daily and was advised to swallow them at night, before bed”** (Mbeya DC, Mageuzi, FGD, pregnant and lactating mothers).

Although most participants agreed about taking one IFAS tablet daily, a participant from Busekelo and Mbeya DC highlighted that when mothers were anaemic, they were advised to take two tablets daily: **“At first I was advised to take one tablet daily, however after they measured my haemoglobin, I was advised to take two tablets daily because I had anaemia”** (Busekelo, Kibole, pregnant and lactating mother, FGD).

**“We were advised to take two tablets early in the morning every day to prevent anaemia”** (Mbeya DC, Mageuzi, FGD, pregnant and lactating mothers).

**“I was advised to take two tablets, one tablet around 8:00 a.m. and another around 8:00 p.m.”** (Busokelo, Ikamambande, women group, FGD).

In some cases, participants were advised to start using IFAS when they were three months pregnant and to continue using them until nine months: **“We were taught to use IFAS from when we are three months pregnant until nine months”** (Busokelo, Kibole, pregnant and lactating mothers, FGD, 28-11-2020).

Although several participants swallowed IFAS with water, a few had different ways of swallowing the tablets, especially those who felt nauseous: **“I was swallowing it with water but it leaves an irritating smell in my throat, I then eat sugar to reduce that effect”** (Busekelo, Luteba, pregnant and lactating mothers, FGD). There were some instances where additional information was provided to the pregnant mothers when they were given the IFAS tablets. One participant from Ikamambande

village was advised to take the IFAS tablet with Pepsi: ***“The only medicine that was given to me was Seprine and IFAS to increase my blood. I was advised to take it with Pepsi only”*** (Busekelo, Ikamambande, FGD). Other participants took lemon or chewing gums to mask the smell and taste of IFAS: ***“After swallowing IFAS, I take chewing gum to mask the bad taste and smell so that I don’t feel it again.”*** Another participant added: ***“I swallow the tablet with water around 8:00 p.m. but I also make sure there is a piece of lemon to lick immediately”*** (Mbarali DC Mahango, FGD, pregnant and lactating woman).

### 3.11 Alternative methods used when IFAS is not available

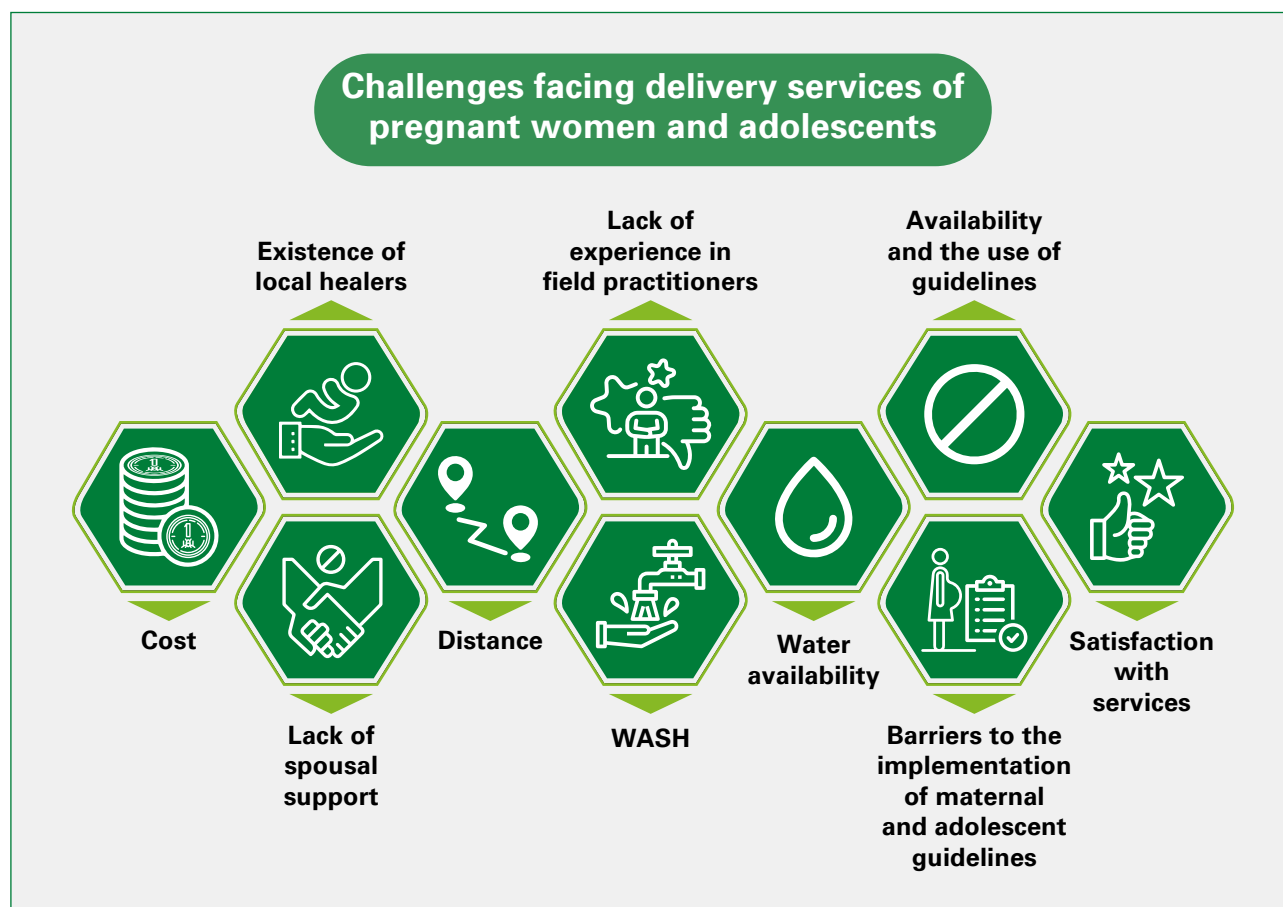
Pregnant mothers had several alternatives when IFA supplements were not available or when they experienced challenges in using IFAS due to nausea. Most of the participants stated that they opted to eat vegetables (greens) such as potato leaves, amaranthus, pumpkin leaves, and aloe vera: ***“I eat vegetables such as potato leaves as an alternative to IFAS tablets”*** (Busekelo, Kibole, pregnant and lactating mothers, FGD). Other participants added: ***“At times, we feel irritated when taking IFAS. They advise us to use potato leaves to increase blood”*** (Luteba, pregnant and lactating mothers, Busekelo, FGD, 26-11-2020). Two participants mentioned aloe vera as an alternative to IFAS: ***“Aloe vera leaves increase blood. I take one cup of aloe vera juice when going to bed”*** (Luteba, Busokelo, pregnant and lactating mothers, FGD). Others reported taking fruits and vegetables together: ***“When IFAS is out of stock, we use amaranths together with fruits”*** (Mahango, Mbarali DC, FGD, pregnant and lactating mothers). Some participants were using fruits only, such as guava, avocado, and local fruits known as “mafuyurisi”. There was also a notion that soda could be used as an alternative to IFAS: ***“We use soda such as Mirinda, Chemicola or beans soup which is not spiced”*** (Kyela-Ndobo, FGD, pregnant and lactating mothers). Mothers from Mbarali reported using cow milk as an alternative: ***“From our Sukuma background, we use boiled cow milk. We drink a lot of milk until we give birth”*** (Mbarali DC, Mahango, FGD, pregnant and lactating mothers, FGD).

### 3.12 Delivery services

#### 3.12.1 Delivery service for pregnant mothers

Interviewed respondents agreed that, like older pregnant women, pregnant adolescents should also give birth in a hospital. They stated that it is recommended to give birth in a hospital because of the risk of complications during delivery. The CHW from Ilembo elaborated that: ***“For adolescents, they must deliver at the hospital and receive assistance from health professionals because it is their first time”*** (Mbeya DC, Ilembo, CHW). This finding was supported by the local Deputy Chairperson who said: ***“Pregnant women should deliver at a safe place and receive good service to reduce the chances of death”*** (Mbeya DC, deputy local chairperson). However, the CHWS admitted that despite the knowledge available, some pregnant women and adolescents give birth at home: ***“There are some who give birth on the way, or at home, but a larger percent deliver at the health facility”*** (Mbeya DC, CHW).

### 3.12.2 Challenges facing delivery services of pregnant women and adolescents



#### 3.12.2.1 Cost

According to the health policy in Tanzania, all delivery services are provided free of cost. However, during discussions with different groups, a majority mentioned costs as a factor limiting delivery at health facilities. This finding was prominent among pregnant women and adolescents: ***“Regarding the health services, they are good. However, recently these clinics started demanding money for delivery which a majority cannot afford”*** (Kyela DC, Ndandalo, pregnant and lactating adolescents).

Besides that, spouses of pregnant and lactating women mentioned: ***“High delivery costs were the challenge to deliver at the health facility”*** (Kyela DC, Ndandalo, spouse of pregnant and lactating women). In Mbarali, men also mentioned that: ***“Some women deliver under the assistance of local healers who are not trained, and this contributes to maternal deaths. This is because they cannot afford delivery costs”*** (Mbeya DC, Mbalizi, spouse of pregnant and lactating women). Concern about costs was also pointed out by the RCH team in Igurusi Mbarali, who said that: ***“Cost is a challenge especially when a referral is given to a pregnant woman to deliver at a bigger hospital due to complications.”*** The RCH in Busekelo suggested: ***“Pregnant women should be given health insurance which helps them to deliver even in private hospitals”***.

### 3.12.2.2 Local healers

Some communities use local traditional healers for delivery because they are cheap, readily available, and are sensitive to the culture and values. The MO confirmed the finding: ***“There is still the existence of local healers who assist women during delivery.”*** And the DMO in Mbarali added: ***“We heard about one local healer in Kyela who assists women during delivery, there is a chance that one even exists in this area.”*** Pregnant and lactating women in Mbalizi confirmed the finding by saying: ***“We have local healers who assist women during delivery in our community. For example, there is a woman who gave birth at home instead of at the hospital and the child died. However, we still use them because they are cheap, friendly, and know our culture and values.”*** Even the DRCHCO acknowledged: ***“They go to local healers to avoid high costs at the health facilities”*** (Kyela DC, Ndandalo, DRCHCO). These local healers were said to give women local medicines which help the women during pregnancy and delivery. The pregnant and lactating adolescents’ group confirms: ***“Local healers are there, and they give out traditional medicines that help protect the unborn baby”*** (Mbeya DC, Mbalizi, pregnant and lactating adolescents). While another group of pregnant and lactating women in Wimba also agreed that: ***“Traditional healers give us traditional medicines to help reduce the pain after delivery.”*** This finding was elaborated by a DNuO who added: ***“There are times they get traditional medicines. However, these medicines are not recommended, they may be the ones that increase labour pains”*** (Kyela DC, Ndandalo, DNuO).

### 3.12.2.3 Lack of spousal support

Another hindrance was the lack of spousal support: ***“Some say that their husband was not there, and they did not have any money, so a neighbour came and helped during the delivery and when the husband came, they decided to go to the facility”*** (Kyela DC, Ndandalo, DRCHCO).

### 3.12.2.4 Distance

Many health facilities are located far from the communities. This was also mentioned as a factor limiting the use of antenatal services and other services overall. The distance was also pointed out by many women, adolescents and health professionals as a major cause of home deliveries as narrated: ***“Because of the distance and our geographical location, a majority deliver at home or on the way to the health facility”*** (Mbeya DC, Ilemba, Deputy RCH). The findings were also shared by the pregnant and lactating women’s group in Kyela: ***“Sometimes we don’t have money. When the labour contractions start, we end up giving birth on the way to the hospital because we can’t afford transport charges and the facility is far”*** (Kyela DC, Ndandalo, pregnant and lactating women). A CHW in Ikamambade shared: ***“For example, the health facility located in Mbigiri is too far. It costs more than 8,000 TSh to hire a motorcycle and sometimes we deliver without assistance from a health worker or with only the husband’s help.”***

### 3.12.2.5 Existence of field practitioners

Many women felt that some field practitioners lack experiences. The finding was pointed out by a CHW in Luteba who said: ***“The common mentioned challenge is during the operation. Pregnant women complain about unnecessary operations because field practitioners use that process as practical learning for them”.***

### 3.12.2.6 Water, hygiene, and sanitation (WASH)

This section presents water availability; efforts to improve WASH; and hygiene and sanitation practices in the surveyed districts. There were different responses concerning water availability. In some areas, water was available all the time, while in other areas, access to water was a severe problem.

### 3.12.2.7 Water availability

Water availability was reported to be a big problem in most areas in the Mbeya region, except Mbeya town and Mbeya DC. The water sources used differed from one location to another. People living in the town reported having access to tap water, while people living in rural areas used water from the rivers and springs as the primary source. A respondent from Busokelo claimed that tap water was available in their village but only in institutions such as schools and dispensaries.

***“In our area, water is a big challenge. Only people in town and some institutions have access to tap water. Others use water from springs or rivers. Most of our villages have springs and rivers”*** (Mbeya Busokelo Lwangwa IDI, WEO).

In the same district, some participants from Ikamambande village also claimed water to be a challenge unlike in Luangwa. In Ikamambande village, rivers were also scarce. Although the village was reported to have taps, water was not available: ***“Water is a challenge in Ikamambande, as it is not available. Neither do we have rivers. Although there is one established project for the provision of water, we don’t get water till today. Now we depend on water from the mountains which is contaminated as it passes through different places”*** (Mbeya, Busokelo, Ikamambande, elderly women, FGD).

Participants from Kyela also complained that water availability was a challenge. They pointed out that previously, there was a water project but currently, the taps have no water and that water was available only during the rainy season: ***“Earlier, we had a water project from DANIDA, but now all the water taps placed are dry”*** (Mbeya, Kyela, Ikimba, Kilasilo, IDI, village chairperson). Another participant added: ***“We don’t have tap water. We depend mainly on well water. During the rainy season, water is available, but it becomes a challenge during the dry season”*** (Mbeya, Kyela, Ndandalo, FGD, adolescents, 25-11-2020).

The respondent from Mbarali DC mentions the same challenge: ***“Surely water is a challenge nowadays in our community. We get water after three or four days. We are struggling to get water, sometimes water comes at midnight”*** (Mbarali, Igurusi, elderly women).

The situation was different in Mbeya DC, as they had access to clean and safe tap water all the time. The participants reported that Mbeya DC has several water projects, which in one way or another, ensure the availability and accessibility of water at all times: ***“In our town, we have the security of safe and clean tap water. There are two water projects, Nzongo and Shongo, which both reach the Mbalizi town. So, water is available for 24 hours”*** (Mbeya DC, Mbalizi, Mageuzi, fathers, 19-11-2020, FGD).

### 3.12.2.8 Availability and the use of guidelines

A discussion about the availability and use of guidelines was carried out with key respondents, including RRCHCOs, DRCHCOs, DMOs, NGOs and RCH service providers. The majority were aware of the recommendations in most of the guidelines. Participants mentioned several guidelines used at the health facilities. These guidelines were focus antenatal care (FANC), emergency obstetric care, family planning, HIV testing, PMTCT, adolescent reproductive health, delivery, and nutrition guidelines. Other facilities had only FANC. FANC is a document that features all the services recommended during pregnancy and narrates how to implement them. Topics included in FANC included identifying and treating already established diseases; early detection of complications that can affect the pregnancy outcome and the prevention and treatment of malaria, anaemia, and sexually transmitted infections (STIs), including urinary tract infections, tetanus, and HIV. It also includes guidance and advice on nutrition, immunization, personal hygiene, family planning, and counselling on danger signs. The DRCHCOs and RCH service providers provided the following information:

***“We have FANC. FANC is the guideline with general services to be offered at each ANC visit during pregnancy”*** (Mbeya, Busokelo, Ikamakitali, DRCHCO, IDI, 25-11-2020, IMAN).

***“Yes, we have guidelines. We have a guideline for dietary intake during pregnancy, family planning, HIV testing. We also have a guideline for adolescent-friendly services”*** (Mbeya, RCH service provider).

***“We have FANC for pregnant women and emergency obstetric care, which covers delivery services and emergencies during delivery”*** (Kyela, DRCHCO).

***“Guidelines for offering health services to pregnant women and adolescents are available. The guideline recommends that pregnant women start ANC visits while the pregnancy is less than three months. We also have a guideline for those who offer delivery services”*** (Mbarali Wimba, RCH service provider).

### 3.12.2.9 Barriers to the implementation of maternal and adolescent guidelines

Despite the availability of guidelines, the RCHCO and RCH service providers reported several barriers related to the use of guidelines. Significant barriers were associated with the lack of adherence to services and recommendations by the consumers of these services. Among the obstacles mentioned were:

- ◆ Having too many interventions and guidelines to follow, which makes it hard to remember them all.
- ◆ The HIV guideline requires testing of the pregnant women and their spouses, but some women have no spouse or were engaged in a relationship with a married man. Engaging in a relationship with a married man was said to affect adherence to antiretroviral (ARV) use.
- ◆ Pregnant women are required to be tested for HIV as soon as the pregnancy is confirmed. Most of these women were not tested for HIV when attending private health facilities.
- ◆ Pregnant women reported not using IFAS and the main barrier to its use was cited as the smell and taste of the tablet, which caused nausea or vomiting.
- ◆ Pregnant women start the course of tetanus vaccine, but they do not complete the required dosage.
- ◆ Lack of space at the health facility made it impossible to offer privacy and adolescent-friendly services.
- ◆ Other guidelines were reported to be outdated and almost none of the guidelines integrated the community component, thereby creating a weak link between services offered at the facility and the community levels, which in turn challenged referral mechanisms.

### 3.12.2.10 Satisfaction with services

All health facilities visited had RCH units. Both key informants and community members were asked about their level of satisfaction with the health services offered at the RCH unit. Key informants were asked if customers/clients were satisfied with the services offered while community members were asked if they were satisfied with the services they received. Health workers acknowledge that their clients received the same RCH services offered in other places in Tanzania. They also felt that their clients were satisfied with the services offered, except in a situation where those services such as IFAS or malaria drugs (SP) were out of stock or a particular measurement such as HIV and haemoglobin tests were not assessed during the planned visit. The health workers also highlighted that adolescent services were not satisfactory because they lacked the special training to support adolescents and the private rooms to offer adolescent-friendly services. Several quotes reflect their thoughts:

***“The services offered are good because we have enough health workers to serve all pregnant women and we have laboratory facilities with everything needed. I think they are satisfied with our services since there have been no complaints”*** (Mbeya, RCH service provider).

***“Previously they were not satisfied but now they are satisfied”*** (CHW, Mbeya DC, Mageuzi, Mbalizi).

***“Honestly, the services offered are good, but it might not be 100 per cent. As you know, there is a package of services which we are supposed to offer pregnant women, but these might not be given as recommended. When the pregnant woman attends the ANC, some measurements should be taken, such as haemoglobin level and HIV, and she should be given some tablets.***

***Sometimes when pregnant women attend ANC, they find that the haemoglobin test machine (HemoCue) is not functioning. Also, pregnant women are not always given IFAS tablets and SP as they might be out of stock. This is why they are satisfied but not fully satisfied*** (Mbeya DC, IDI, Assistant DRCHCO, 23-11-2020).

***“Even adolescents are not satisfied as the service is not friendly as recommended. They might not be satisfied because a majority prefer to have a separate room and not to be mixed with older women”*** (Mbeya, DMO, DRCHCO).

Most interviewed men felt that the services offered were satisfactory and the reason being that heard, and they acknowledged safe deliveries and fewer maternal deaths:

***“The service offered is good. If was not good, we would hear some complaints”*** (Mbeya DC, Mbalizi, fathers, 28-11-2020).

***“They are satisfied because the injection provided protects the child and we are seeing good results when women give birth”*** (Mbeya DC, Mbalizi, fathers).

***“Truly, the services are good because the children are born healthy and with less maternal and child mortality. If deaths happen, it might be only an occasional case that happens accidentally”*** (Mbeya DC, Mbalizi, fathers).

Mothers and adolescents largely indicated a high level of satisfaction. Respondents were satisfied with the services offered as long as the service providers spoke politely when attending to them; the time spent to provide nutrition education was reasonable; the service offered was free; the waiting time was short; and there was a positive outcome to the pregnancy. Some women also provided recommendations to reduce the existing challenges.

***“We get good health services. When we go to the health facility, service providers attend to us well and are polite”*** (Mbeya, Kyela Kilasilo, FGD, pregnant and lactating women, 23-11-2020).

***“On my side, the services are good, and I am satisfied because they are offered for free”*** (FGD, pregnant and lactating adolescents, Ikamambande, 27-11-2020).

***“We are satisfied with the health services provided because when you follow the instructions of the health service providers, you deliver safely”*** (Mbeya, Kyela, Ndandalo, FGD, pregnant and lactating adolescent, 24-11-2020).

***“I am not satisfied with the health services because while we are waiting for the services, health-care providers leave us and go to have breakfast, while we came there without even having our breakfast. If not enough clients, after they finish their breakfast, they may not come back and continue to tell stories (for their absence). They do not concentrate on offering the service, rather they take frequent breaks and do something else”*** (Mbeya, Kyela, Ndandalo, FGD-pregnant and lactating adolescents, 25-11-2020).

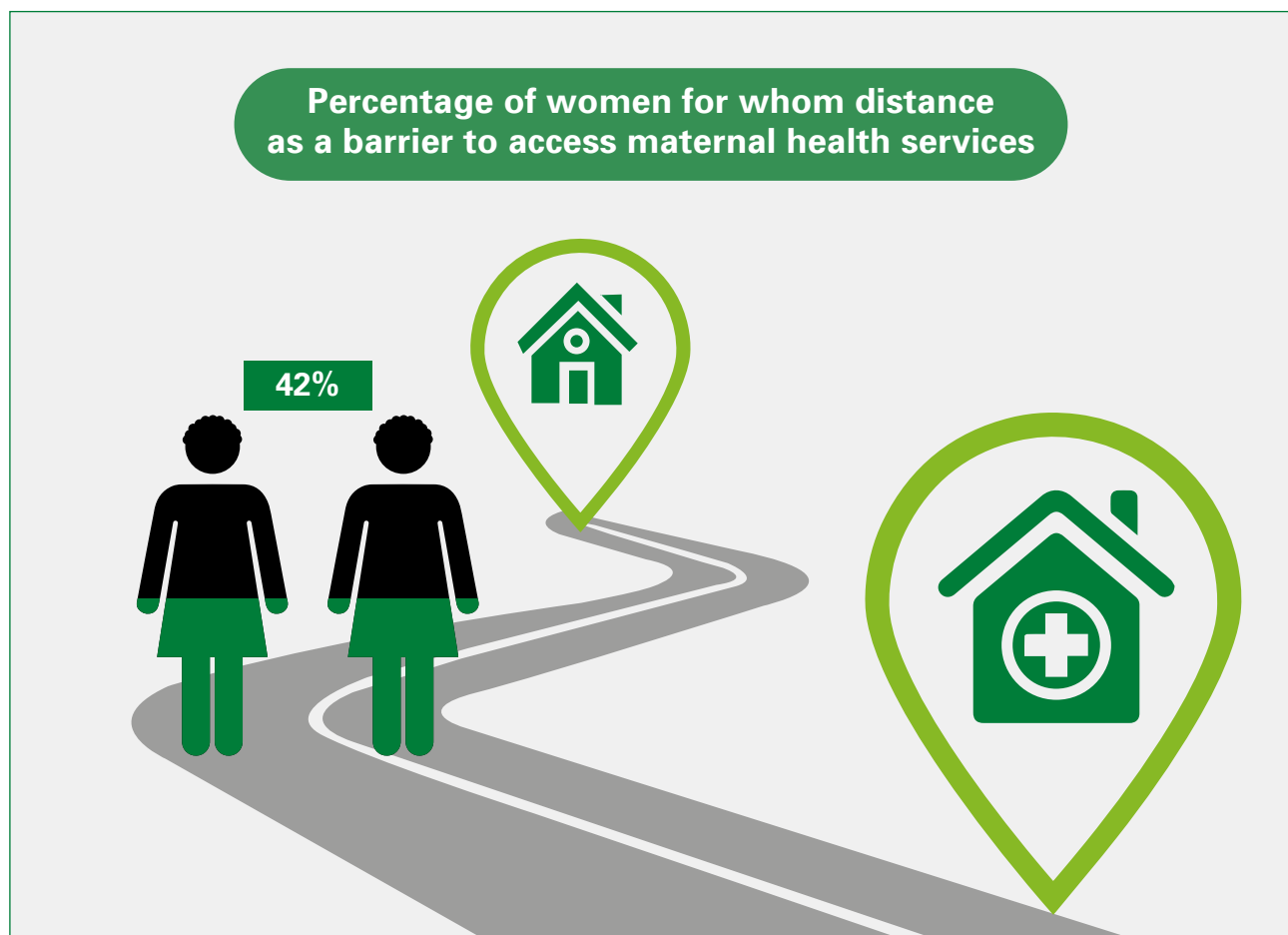
***“The service is good although sometimes IFA and SP are not available at the health facility and we are told to buy these”*** (Mbeya DC, Ilembo, pregnant and lactating women, FGD, 20-11-2020).

***“To increase maternal health service satisfaction, they need to increase the numbers of rooms and the number of health-care providers for offering the services”*** (Mbeya, Busokelo, Luteba, pregnant and lactating woman, 26-11-2020).

## DISCUSSION

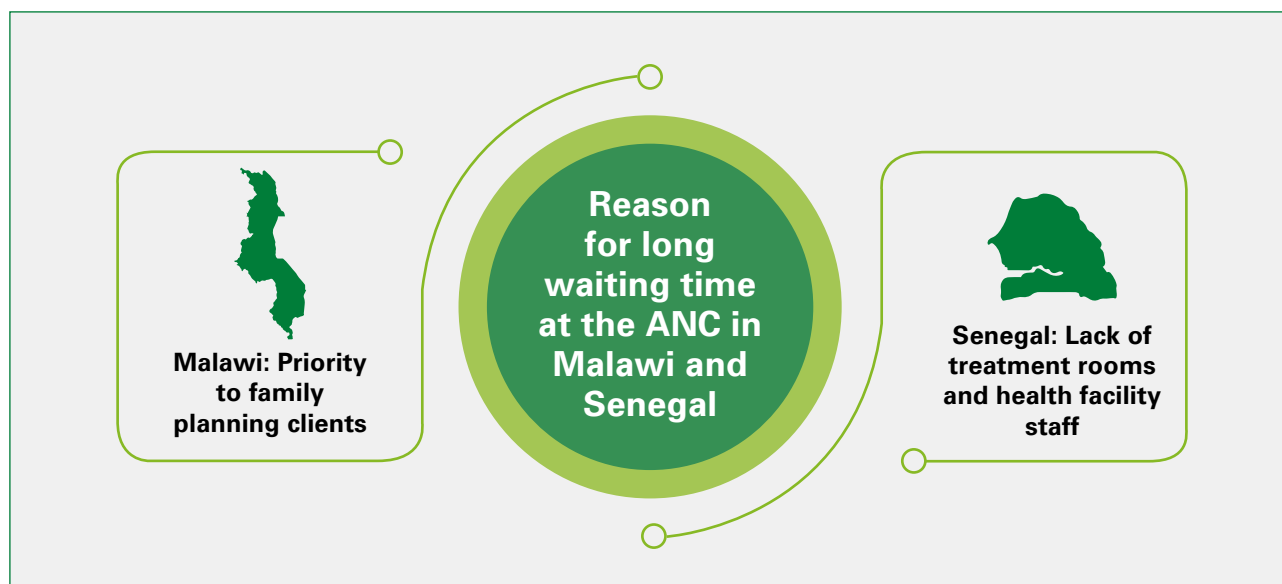
Several factors were mentioned as barriers for women and adolescents to access health and ANC services. These included facility-, community- and individual-level factors. Most of the factors which hindered the use of health and nutrition services were the same as those limiting the use of delivery services.

Distance to the health facility which required travelling costs and living in the mountainous regions were mentioned as barriers to the access to health and ANC services among pregnant women and adolescents. The same finding was reported in Tanzania where 42 per cent of pregnant women mentioned distance to the health facility as a barrier to accessing maternal health services. Also, studies conducted in Nepal, Laos and Nigeria reported distance as the main factor limiting access to ANC services (Maharjan et al., 2019; Thongmixay et al., 2019; Yaya, Okonofua, Ntoimo, Udenigwe, et al., 2019). Using transport was said to be a means of reducing the walking time and the distance to the health facility. This factor was



linked with the economic status of pregnant women and adolescents. Interviewed pregnant women who lived far from health facilities paid approximately TSh 5000–7000 for hiring a motorcycle transport, which is considered quite expensive. Additionally, women were also required to pay for some medical examination services during pregnancy and had to buy IFA supplements when the health facility ran out of stock. Most pregnant women skip ANC visits due to the cost involved. Cost was not only a barrier during pregnancy but also during delivery. Pregnant women claimed to deliver at home due to transport and delivery equipment costs. The TDHS also reported that only 63 % of pregnant women delivered at in health facilities (TDHS, 2016). The results from DHS concur with findings from Gambia, Zimbabwe and Nigeria (Laing et al., 2017; Mutowo et al., 2021; Shartzet et al., 2015; Yaya, Okonofua, Ntoimo, Udenigwe, et al., 2019) which reported that transport and medical costs affected women’s use of reproductive health services.

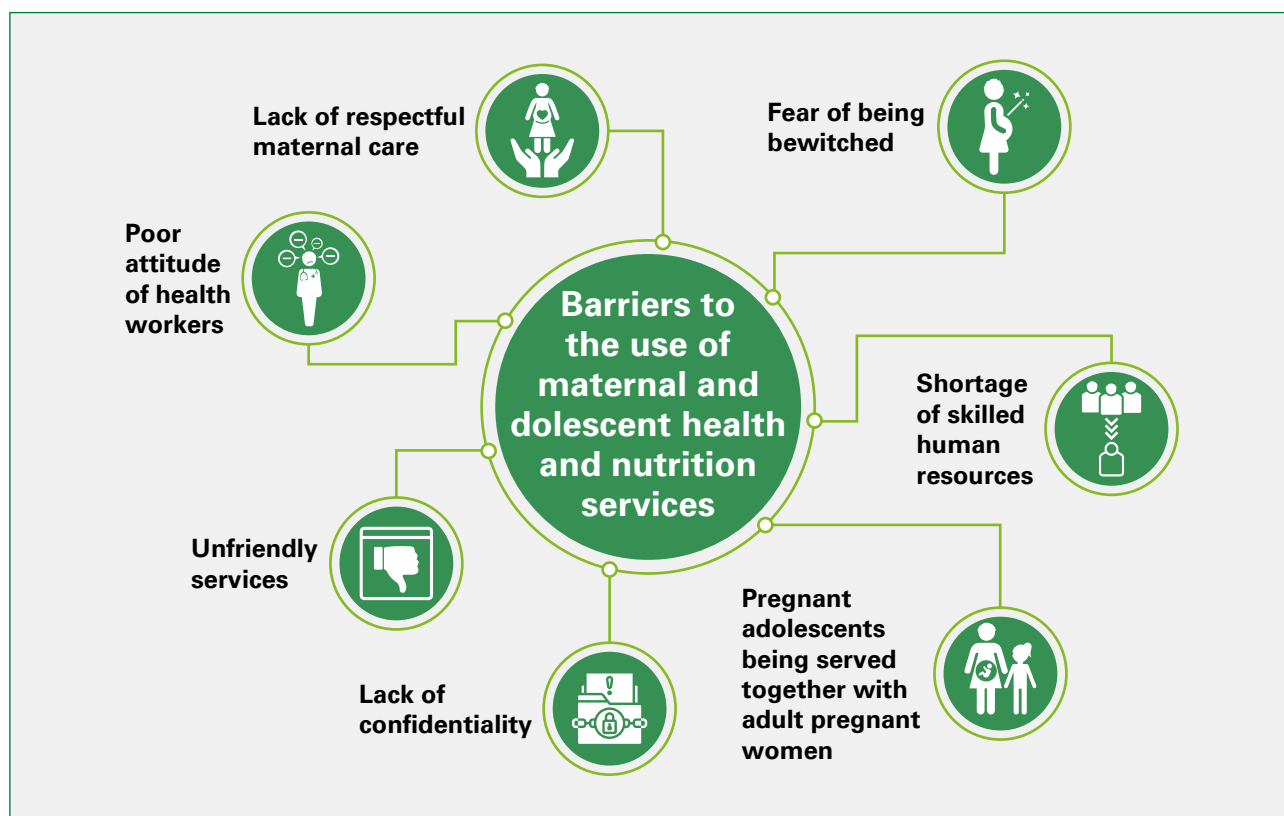
Another barrier was the waiting time for the services at the health facility, where a majority complained that they spent a long time at the facility before they were attended to, while nurses spent that time having breakfast or talking. This was said to discourage women from attending subsequent visits. This result is in line with another study conducted in Tanzania by Hokororo (2015), where pregnant women complained of waiting for many hours at the facility, which hindered their accomplishing farm work or completing other essential daily tasks (Hokororo et al., 2015). Women also complained of not being served if they came late to the ANC. The results agreed with studies conducted in Malawi and Senegal (Chimatiro et al., 2018; Kim et al., 2019). In Malawi, the reason given for the long waiting time was that, health workers were prioritizing family planning clients before attending to ANC clients (Chimatiro et al., 2018), while in Senegal, the reason was a lack of treatment rooms and health facility staff.



Lack of partner support was another barrier mentioned for late ANC visits and low health facility delivery. Women complained that their spouses/husbands did not support them financially or accompany them to health facilities and, as a result, women are unable to pay for the transport and medical costs. This complaint was more common among single mothers, particularly adolescents and those who had an affair with a married man. Spouses/partners being busy with work and fear of testing for HIV were

other reasons given for their absence. The studies conducted in Zimbabwe and Uganda also found the same results, where lack of spousal support limited the use of ANC services (Mutowo et al., 2021; Uldbjerg et al., 2020). The reasons reported from these studies were, husbands were out of the town or unavailable as the husband might be staying with another wife in a different location (Uldbjerg et al., 2020), fear of HIV testing and men not being committed to the pregnancy (Mutowo et al., 2021; Uldbjerg et al., 2020). Additionally, the role of men within households was generally perceived to be of financial providers, therefore a husband's support was commonly constructed to solely mean financial support (Yaya, Okonofua, Ntoimo, Udenige, et al., 2019).

Lack of respectful maternal care was another barrier to the use of maternal and adolescent health and nutrition services. Health workers were reported to use harsh language to clients, which discouraged pregnant women and adolescents from using the services. This result coincided with the findings in Uganda, where the attitude of health workers was mentioned to be an important factor in influencing the decision on whether to attend the ANC or not (Uldbjerg et al., 2020). The study found that half of the pregnant women mentioned poor attitude of health workers as a factor limiting their use of antenatal care services, as they feared being neglected, humiliated, or verbally abused. Unfriendly services and a lack of confidentiality were mentioned as barriers, mostly for adolescents. Pregnant adolescents were served together with adult pregnant women, which made them feel uncomfortable at the ANC visit. The same results were reported in Lao rural (Sychareun et al., 2018; Thongmixay et al., 2019). Shortage of skilled human resources to attend to adolescents was mentioned to be another barrier to the use of nutrition and health services. This result concurs with two other studies conducted in Zimbabwe and Nigeria (Mutowo et al., 2021; Yaya, Okonofua, Ntoimo, Udenigwe, et al., 2019). Another factor requiring strong SBCC was the fear of being bewitched, which also delayed the start of ANC visits.



This study also assessed the barriers to the use of IFAS. Most people were not aware of the broad importance of IFAS, which compromised the consumption of the tablets. A majority felt that the main benefit of IFAS is to increase haemoglobin levels and so felt that it was not important to consume IFAS if their haemoglobin level was good. The low knowledge about the importance of using IFAS might be due to inadequate counselling on the importance of IFAS during pregnancy (Siekmans et al., 2018). The study conducted in the north-western part of the Tanzanian mainland found that the knowledge on anaemia and IFAS influenced the use of IFAS (Lyoba et al., 2020). Side effects were repeatedly mentioned as the main barrier to the use of IFAS. Most women complained of the side effects being mainly nausea and vomiting due to the smell and taste of the tablets. The study conducted in Kenya also reported the side effects of IFAS to include nausea, vomiting, feeling tired and a bad smell and mentioned these side effects as barriers against the use of IFAS (Kimiye et al., 2017). Few ANC visits were reported during interviews with pregnant women, men, the elderly and health workers to be another cause of low adherence to IFAS. The same factor was reported in Kigoma and in other places (Lyoba et al., 2020; Sychareun et al., 2018; Yaya, Okonofua, Ntoimo, Udenigwe, et al., 2019). It was also mentioned that health facilities experienced periodic stock outs of IFAS and that service providers requested pregnant women to purchase IFAS from the market. A multi-country study, which included Afghanistan, Bangladesh, Ethiopia, Indonesia, Kenya, Nigeria, and Senegal (Lyoba et al., 2020; Mutowo et al., 2021; Siekmans et al., 2018), and findings from Zimbabwe and from other regions of Tanzania also reflected that stock outs of IFAS contributed to its low adherence. The number of pills consumed per pregnant woman was also said to be a problem. Pregnant women also complained that the pills provided were too many, which made it hard for them to consume all the tablets.

Interviewed participants were mostly satisfied with the services offered at health facilities despite challenges of stock outs of drugs; equipment which was not working; lack of space to offer services in privacy; and nurses who did not offer respectful care.

# CONCLUSION AND RECOMMENDATION

## 5.1 Conclusion

This study assessed the barriers to the use of existing maternal and adolescent health services in the Mbeya region, including adherence to IFAS during pregnancy. The barriers to the use of ANC and delivery services were similar among the women and adolescents who participated in this study. Barriers to the use of ANC services expressed by the women included: transport and delivery costs due to topography and distance, lack of partner support for single or unmarried women, long waiting times to receive the services and economic hardships. However, barriers such as stigmatization, feeling ashamed, unfriendly services and the lack of trained health workers to provide services to adolescents were more pronounced, which limited the use of ANC services by pregnant adolescents. Existence of traditional birth attendants who offer friendly and culturally sensitive services and practitioners who perform caesarean section as part of their personal learning were also mentioned as reasons for non-delivery at health facilities.

IFAS was among the services offered at all ANCs, free of cost. All pregnant women who attended ANC visits reported receiving IFAS tablets (if available), but not all pregnant women used the provided tablets as recommended. Several barriers to the use of IFAS were reported to include limited knowledge on the importance of IFA, the side effects of IFA due to the awful smell and taste, too many pills to be swallowed during pregnancy and frequent IFA stock outs at health facilities. Poor adherence to these services (ANC and the use of IFAS) was reported by key informants to be the main barrier to the implementation of maternal and adolescent guidelines.

## 5.2 Recommendations

| Barrier                                                  | Recommendations                                                                                                                                                                              |
|----------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Use of health, delivery and ANC services                 |                                                                                                                                                                                              |
| Distance/transport cost                                  | There is a need to expand the delivery of essential services through VHND and to explore linkages with socio protection interventions (TASAF) to support poor women                          |
| Poor husband/spousal support                             | Strengthen SBCC package and delivery through ANC; CHWs involving men; influential members of the community including alternative medicine providers, TBAs, faith leaders and village leaders |
| Medical and delivery cost                                | To minimize delivery costs, a free delivery kit should be provided to pregnant women during the third trimester. Provide pregnant women with insurance                                       |
| Respectful maternal care                                 | The government and other stakeholders should train health-care providers on adolescent-friendly services and ensure enough space for private areas, to offer ANC services to adolescents     |
| Lack of specialized health-care provider for adolescents |                                                                                                                                                                                              |
| Use of IFAS                                              |                                                                                                                                                                                              |
| Side effects                                             | Health-care providers should provide focused education on the importance of IFAS/MMS and on ways of coping with their side effects to increase adherence                                     |
| Distance to facility                                     |                                                                                                                                                                                              |
| Too many pills to swallow                                |                                                                                                                                                                                              |
| Stock outs                                               | The government should ensure the availability of basic supplies, commodities, and equipment at health facilities without depending on facility self-financing                                |

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