



Formative Research for the Introduction of  
Multiple Micronutrient Supplements in

# TANZANIA



## Phase I

Marketing of Multiple Micronutrient Supplements in  
Mbeya Region – Tanzania Mainland

## Phase II

Assessment of the Ethnomedical Perspectives of  
Illnesses and Nutrition in Mbeya Region – Tanzania Mainland

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# Formative Research for the Introduction of Multiple Micronutrient Supplements in Tanzania

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## List of Abbreviations

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<b>IFAS</b>	Iron and Folic Acid Supplements
<b>ANC</b>	Antenatal Clinic
<b>DHS</b>	Demographic and Health Survey
<b>FGD</b>	Focus Group Discussion
<b>IFAS</b>	Iron and Folic Acid Supplements
<b>MMS</b>	Multiple Micronutrients Supplements
<b>PSU</b>	Pennsylvania State University
<b>TDHS</b>	Tanzania Demographic and Health Survey
<b>WHO</b>	World Health Organisation



## Introduction

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This study aimed to assess the ethno-medical perspectives toward maternal and child nutritional health and illness and marketing of Multiple Micronutrient Supplements in the Mbeya region in Tanzania. Reports show that only 21% of pregnant women used Iron and Folic Acid supplements for 90 days in Tanzania. On the other hand, anaemia affects more than half (58%) of adolescents aged 10–19 years and 57% of pregnant women. Also, consumption of diversified diet has remained poor in Tanzania and Mbeya despite being a high food basket zone. Understanding the ethno-medical perspectives toward maternal and adolescent's nutritional health and illness may be one promising way to explore ongoing challenges and factors that hinder maternal and adolescent nutritional health and how to address them. Ethno-medicine is the study of how medical problems are realized and dealt with in different societies (Hughes, 1968). Furthermore, research shows that market-based approaches appear to help to identify potential programs and platforms to deliver Multiple Micronutrients Supplements (MMS) as it provides insight to know the market situation, market size, and demand. There is also evidence that social marketing of MMS can be used to bridge the gap in access, improve awareness of supplementation, and increase the likelihood that women will try supplements.

## Methodology

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The study was conducted in two phases. Phase one collected information concerning the marketing of multiple micronutrients while phase two intended to capture knowledge about disease facing pregnant women, foods eaten, and norms underlying foods and diseases during pregnancy. Participants were recruited at the community level. Phase one involved focus group discussion with women of reproductive age, participatory workshop with women of reproductive age, males and elderly, and visiting drug stores to document the availability of MMS. The study was conducted in the Mbeya region covering four out of six districts. The four districts were purposively selected by a regional team from the Mbeya region. The districts were Mbarali, Busekelo, Mbeya DC and Kyela. From each district, three villages were purposively selected by the regional team making a total of 12 villages. The villages were Kibole, Luteba and Ikamambande from Busokelo DC; Ilembo, Simambwe and Mageuzi villages in Mbeya DC; Igurusi, Madibira-Mahango, and Wimba Mahango villages in Mbarali DC and Ndobu, Kilasilo and Ndandalo villages in Kyela DC. From each village, 20 Focus Group Discussion (FGD) were conducted with pregnant women to capture their perceptions about MMS. The FGD's were followed by 17 participatory workshops with mothers, fathers and elderly to capture necessary information for MMS marketing. Each workshop had approximately 10–12 participants. The team also visited 47 drug stores, 6 from Mbeya DC, 14 from Mbarali DC, 8 from Busekelo, and 19 from Kyela district to assess the availability of MMS, market price, and purchaser of the MMS. The pharmacies were selected based on convenience. All pharmacies that were found in the district town center and villages selected were included.

During the phase two assessment, three villages sampled from each study district during the first phase of data collection were also visited in the second round of data

collection. Action research utilizing a participatory approach (free listing and pile sorting) and in-depth interviews were conducted with mothers of reproductive age and health workers. The goal was to explore knowledge of diseases facing pregnant women, foods eaten, and norms underlying foods and diseases during pregnancy. Participants were recruited from the community. A total of 120 women, approximately 30 from each district, were invited for free listing and 208 women, an average of 52 from each district, were involved in the pile sorting exercise.

Microsoft Excel was used to process the data and produce a tab-delimited file ready for analysis using visual Anthropac - Free lists and pile sorting software. A list of twenty food items and 15 diseases was generated separately in each district based on salience and used for pile sorting exercises. The pile sorting was followed with in-depth interviews with women of reproductive age (18–49 years) and health care providers. A total of 76 IDI was conducted in all of the four districts. Out of that, 59 were IDIs conducted with women of reproductive age 18–49 years and 17 were IDIs conducted with health workers.

## Findings and recommendations

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### Product-related findings and recommendations

Mothers perceived that IFAS was good for anaemia prevention and improved child health. Two participants were able to relate folic acid deficiency with Spina Bifida and birth defects. Participants also perceived that IFAS makes the mother strong allowing them to perform their daily work, prevent illnesses and build their body. The majority also knew that they were supposed to take one tablet daily but with varied explanations about the ideal time to swallow the tablet. Many admitted that they were supposed to take one tablet before sleeping while a few others reported being advised to take two tablets every day when anaemic. The majority admitted taking the IFAS tablets before sleeping to reduce nausea while few others took in the morning. IFAs were available in all facilities and were given for free. However, some facilities experienced periodic shortages, and mothers were advised to purchase them. The price per sachet was 2000 Tanzanian shillings (TSh) which were said to be expensive. In a situation when mothers experienced a shortage and had no money to purchase IFAS, they admitted to using vegetables, fruits and a few also mentioned drinking one cup of Aloe-Vera daily to increase blood. Participants mentioned several attributes that make them dislike IFAS or other MMS. The attributes were odour, taste, and colour. The IFAS was said to have an offal metallic taste with a strong odour and the reddish colour seemed like they were taking blood.

The majority also reported not liking the sweet coated IFAS and overall, they experienced nausea and sometimes vomiting after taking the IFAS tablets. To mask the effects, participants swallowed the tablets with water and immediately ate lemon, sugar or chewing gum. Regarding the preferred colour and size of the MMS sample provided, groups came up with different views. Despite the complaints about red colour, the majority still felt that red colour should be maintained as it symbolizes blood and participants are used to it. The green colour became second and the justification was its association with nature and traditional medicines. White colour ranked third and was said to represent many other white-colored drugs available in the drug stores. The majority felt that the size of MMS was good but only a few proposed to have a much smaller tablet-like “Piriton” to facilitate swallowing. They recommended that if a new MMS is to be produced, smell, taste and size need to improve.



## Price-related findings and recommendations

Participants visited 47 drug stores to document the availability of MMS and prices. Out of 47 facilities visited, 30 had at least one multiple micronutrient supplement (MMS). Twenty different brands of MMS were found in the study districts. The 21-century prenatal dietary supplements and Hemovit were the only products sold at a higher price compared to other products. Price mark for the majority of the MMS tablet ranges from 150 to 1500 and from 2000 to 7500 for liquid products per bottle. Out of the 20 MMS presented, three brands (Becoshell, Zenergy and Megavity) were purchased by both men and women and the rest were purchased by women. If MMS is to be sold, the price should be reasonable since 2000 TSh which was the price of IFAS seemed expensive.

## Promotions-related findings and recommendations

Many of the FGD participants reported receiving IFAS from health facilities. None of the participants mentioned any other sources. They reported that the supplements were given to suffice a one-month period since pregnant women were given a one-month appointment. Few pregnant mothers were given IFAS tablets to cover a three-month period. The majority also knew that they were supposed to take one tablet daily but with varied explanations about the ideal time to swallow the tablet. Several quotes reflect the perception on use: *“They said we should swallow one tablet every day, meaning that we may take it in the morning or evening. What matters most is that you must take one tablet per day”* (Mbeya\_Mbeya Rural\_FGD\_pregnant and lactating mothers). Several participants also reported taking IFAS after a meal and when going to bed. *“They told us to eat first before taking the tablet”* (Busokelo\_Ikamambande). Presented quotes symbolize that women trust health workers and health facilities could be the best system to distribute MMS, while community health workers may act more on community sensitization on ANC use.

Several myths regarding foods eaten during pregnancy were reported, including increased babies' weight which might results in caesarean section during delivery as a result of eating eggs or the baby will be born with a bald head. Drinking milk was associated with babies being born with dirty fluids and eating liver was said to cause tongue problems (the child's tongue will stick into the lower part of the mouth). Eating pork and goat meat was associated with babies being born with sores and patches. SBCC package will need to address myths around food during pregnancy as may perpetuate malnutrition at early life.

Participants were also unable to group foods correctly, for example, protein foods were classified as body-protecting foods and carbohydrates were said to protect the skin. Anaemia, BP, STI (HIV/ AID, Gonorrhea and Syphilis), fungal infection, abdominal stomach pain, and Malaria were considered moderate or severe illnesses, and participants felt that if left untreated, may harm the mother and/or the baby. The less severe diseases were fever, vomiting, cough, flu, nausea, fatigue, leg cramps, swollen legs, dizziness and waist pain. The majority felt that these less severe diseases do not require treatment as they are pregnancy related complications. On the other hand, the understanding of MMS, particularly IFAs, was high but not on other forms of MMS. IFAS were commonly known to prevent anemia but few participants were able to relate them with the prevention of congenital malformations. There was no local meaning attached to MMS since pregnant mothers relied more on health workers' information. Public awareness is needed to encourage pregnant women to consume high protein foods which are necessary for child growth. Education is also needed to ensure that less severe diseases are treated, as they might be underlying symptoms of more serious diseases. Besides, the importance of MMS on the prevention of anaemia, congenital malformation, and improvement of micronutrient status for better birth outcomes needs to be emphasized.

## Tailored messaging findings and recommendations

Mothers proposed the use of health facilities as the main source of information related to their health and MMS. They also proposed the use of other media including women's groups and mobile phone messaging. Participants emphasized that reaching out to adolescents requires different approaches including school, family members (mother, father, sisters, and boyfriends), and television or mobile phones since they spend more time watching movies or chatting. Distribution of brochures among school children was also said to be an effective way of reaching them. The best way of reaching fathers/men was through village meetings, others felt that radio, village public announcements, and seminars would be effective.

Sixteen names were proposed to be used when messaging about MMS, but two names became dominant "virutubisho vya mama mjamzito" meaning multivitamin for pregnant women and "virutubishi lishe" meaning nutritive supplements. Again, sixteen slogans were proposed and three slogans were said to attract more attention ("okoa mama okoa mtoto" meaning save mother save child, "boresha afya ya mama na mtoto" meaning improve maternal and child health, and "virutubishi bora kwa kinamama" meaning good multivitamins for women). The participants proposed three logos, one with a picture of a pregnant mother, another with a picture of pregnant women beside, a nurse giving a MMS tablet to the mother, and the last was a picture of a pregnant and a lactating mother with a healthy child.

## Conclusion

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This ethnomedical study observed inadequate knowledge and perception regarding diseases facing pregnant women, foods eaten, and demonstrated several negative norms underlying foods and diseases during pregnancy. Also, low use of IFAS was mainly related to offal smell and metallic taste. Extensive education and awareness creation should be targeted towards pregnant mothers and communities to improve their knowledge about foods and diseases associated with pregnancy. The education should be done routinely i.e. every Antenatal Care attendance to ensure that all pregnant women are reached since continuous exposure to education is likely to increase understanding. Besides, the production of new MMS or IFAS, the manufacturer should consider improving its taste and smell. Promotion should consider the selected names, slogans and logos provided.



# 1.0 Introduction

Nutrition is among development priorities in Tanzania, and the government has made significant progress in improving it among vulnerable groups (children). During the period 1992–2015, there has been a tangible reduction of malnutrition (including under-nutrition and micronutrient deficiency) from 50%–34%, (TDHS, 2016). However, despite these gains, there have been no changes to women. It has been shown that, one in ten women age 15–49 years are thin (BMI<18.5), overweight and obesity among women doubled in the past 25 years from 11% in 1991–1992 to 28% in 2015–16, and almost half (45%) of women are anemic.

Given the importance of women's nutrition toward maternal and child health, there are many interventions done to improve their status, including micronutrient supplementation such as iron and folic acid supplementation (IFAS). The World Health Organization (WHO) currently recommends the provision of IFAS to reduce the risk of iron deficiency especially anemia among pregnant women during Antenatal Care visits (WHO, 2012), and the Government of Tanzania already has systems in place for delivery of iron and folic supplement known as IFAS to pregnant women in all health facilities free of charge. However, The Demographic and Health Survey shows that only 27% of pregnant women use IFAS and 21% only use at least 90 tablets of IFAS as advised by WHO, while only 51% visit Antenatal Care clinic (ANC) four times as recommended. The study also shows that 57% of pregnant women still experience anemia, and there has been an increase in maternal death from 454/100000 in 2010 to 556/100000 in 2015 (TDHS-MIS, 2015-16).

On other hand, the increasing concern that IFAS may not be sufficient to replenish the micronutrient deficiency that often occurs in pregnant women has encouraged the launch of Multiple Micronutrient Supplement (MMS) (Bhutta, Imdad, Ramakrishnan, & Martorell, 2012). Compared to IFAS, MMS is more superior especially for anemic and underweight women as these supplements contain iron and folic acid, in addition to 13-15 different micronutrients, while IFA alone contains only iron and folic acid. Recent evidence from Lancet shows that MMS lowers the risk of low birth weight by 19%, small-for-gestational-age births by 8%, preterm birth by 16%, cutting 6-month neonatal mortality by 29% as compared to IFAS alone. Besides, transitioning from IFAS to MMS is very cost-effective, with positive health outcomes for both newborns and pregnant women, and an unprecedented return on investment (Kashi et al., 2019).

This study aimed at assessing the ethno-medical perspectives toward maternal and child nutritional health and illness and marketing of Multiple Micronutrient Supplements in the Mbeya region as the situation is quite different compared to other regions. Reports show that despite the 97% of pregnant women attending ANC at least once during their pregnancies, only 16% of facilities carries out hemoglobin testing and 58% of adolescent age 10–19 years are anemic and with a higher number of adolescents who were pregnant (33%) in Mbeya region compared to the average countrywide (27%) (TDHS-MIS, 2015-16). Understanding the ethno-medical perspectives toward maternal and child nutritional health and illness may be one promising way to explore ongoing challenges and factors that hinders maternal and child nutritional health and how to address them. Ethno-medicine is the study of how different cultural groups perceive diseases (in health and illness), how they align

themselves to healthcare (preference and access) and what kind of social organization the healthcare they choose (biomedical or traditional) fits into, (Fabrega, 1975). It involves how medical problems are realized and dealt with in different societies, (Hughes, 1968).

Furthermore, research shows that market-based approaches appear to help to identify potential programs and platforms to deliver MMS as it provides insight to know the market situation; market size, and demand for MMS (Olney, Rawa, & Ruel, 2012). There is also evidence that social marketing of MMS can be used to bridge the gap in access, improve awareness of supplementation and increase the likelihood that women will try supplements (Warnick et al., 2004).



## 2.1 Study Objectives

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To generate demand for MMS through tailored social marketing of the supplement.

## 2.2 Research questions

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1. What are other locally available medicines/products in use by pregnant women and what characteristics of them are most attractive or unattractive to users?
2. How MMS is perceived within the medical belief systems among pregnant women.
3. What product-related factors (e.g. packaging) can be modified to ensure MMS is acceptable to pregnant women and their influencers.
4. To identify local illness and food terms to be used in tailored messaging when promoting MMS use.
5. To elucidate food prescriptions and food proscriptions (i.e., taboos) that may exist during pregnancy in the cultural setting where MMS will be introduced.
6. To define local food and illness classification systems within a cultural context
7. To assess maternal risk perception toward pregnancy-related illnesses and birth outcomes
8. To understand how MMS fits into local understandings/descriptions of nutrition-related illness

## 3.1 Geographical location

The Region is located in the southern highlands of Tanzania mainland. It is divided into 5 districts with 7 Local Government Authorities (LGAs) namely: Chunya, Mbeya, Kyela, Rungwe, Mbarali, Busokelo and Mbeya City. It is further sub-divided into 15 divisions, 178 wards, 533 villages and 181 Hamlets (Mitaa). The Region borders the Republic of Malawi to the South, Songwe Region to the West, Singida and Tabora Regions to the North and Iringa and Njombe Regions to the East with Kasumulu in Kyela district being the main entry and exit into the neighboring country of Malawi. Mbeya region was selected as a pilot region to implement maternal and adolescent nutritional micronutrient supplements because of various reasons that will facilitate the implementation, monitoring and evaluation of the program. These includes having a high prevalence of stunting (i.e. 38% in 2015/16, above the national average of 34%); the existence of enough quality infrastructures; a functional network of community health workers (CHWs) established in over 80% of villages; and the presence of health service providers (HSPs) in each health facility who have received on-job training, mentorship and coaching on maternal and child nutrition. Moreover, UNICEF and other development partners with strong expertise in maternal and child nutrition, such as Catholic Relief Services (CRS) and COUNSENUTH, are committed to continuing supporting the region at least for the next three years, which will contribute to sustaining the costs for programme implementation. Local Government Authorities in Mbeya region is also strongly committed to starting the program.

**Figure 1** Map of Tanzania and Mbeya region.



## 3.2 Study design and setting

This qualitative study design was conducted in the Mbeya region covering four out of six districts. The four districts were purposively selected by a regional team from the Mbeya region. Mbarali and Busekelo will implement IFAS and Mbeya DC will implement MMS. From each district, three villages were purposively selected by the regional



team per district making a total of 12 villages. The villages were Kibole, Luteba and Ikamambande from Busokelo DC; Ilembo, Simambwe and Mageuzi villages in Mbeya DC; Igurusi, Madibira-Mahango and Wimba Mahango villages in Mbarali DC and Ndobu. Kilasilo and Ndandalo villages in Kyela DC

### 3.3 Sampling, sample size and data collection.

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## PHASE I

### Focus Group Discussions and Participatory Workshops

Pregnant women and women with children under two years old, fathers with children under two years and elderly women who lived within the area of a project were included in the study. The study participants were citizens residing in the area within the district councils selected (self-identified). The study excluded participants who were not residents or were not willing to participate in the FGD and participatory community workshop.

A non-probability purposive sampling method was used to recruit participants for the FGD and participatory workshops. Focus group discussions with pregnant and lactating women were done to determine attitudes towards MMS. A total of 20 FGD's were conducted with an average of eight pregnant or lactating women with children under two years per session. On average five FGD's were conducted per district selected. The discussion was followed by participatory workshops conducted with pregnant and lactating women, fathers with children under two years, and elderly women to determine the most appropriate branding, messaging, and channels for the introduction of the MMS product. A total of 17 workshops were conducted in the selected villages in districts with 10–12 participants each. The place and time for the discussions were chosen by the researcher based on the convenience of the participants. Each of the FGD and workshops took an average of 60–90 minutes depending on the ability of the respondent. All the conversations during the FGDs were conducted in the Kiswahili language for participants to be able to express their thoughts freely. Workshops and FGD discussions were recorded, transcribed, coded, and were eventually analyzed using NVIVO 12 software.

### Market Survey

To assess the market for MMS, a team of 8 Research Assistant (RA) was trained for four days on the identification of Multiple Micronutrient (MMS) supplements that are used for improving maternal health. They then visited 47 drug stores, 6 from Mbeya DC, 14 from Mbarali DC, 8 from Busekelo, and 19 from Kyela district to assess the availability of MMS, market price, and purchaser of the MMS. The pharmacies were selected based on convenience. All pharmacies that were found in the district town center and all villages selected were included.

Data were collected from drug shops (Duka la Dawa Baridi (DLDB) or Accredited Drug Dispensing Outlets) (ADDO) located in each of the following study districts (Mbeya DC, Kyela, Busekelo and Mbarali DC) between November 17th and 3rd December 2020.

## PHASE II

A qualitative study was conducted in four councils of the Mbeya region; Mbeya DC, Mbarali DC, Busekelo DC and Kyela DC. Three villages sampled from each study district during the first phase of data collection were also visited in the second round of data collection. Action research utilizing a participatory approach (free listing and pile sorting) was conducted with mothers of reproductive age. The goal was to explore knowledge on disease facing pregnant women, foods eaten and norms underlying foods and diseases during pregnancy.

### Free Listing and Pile Sorting

Participants were recruited at the community level.

A total of 120 women, approx. 30 from each district, were invited for a free listing session, and 208 women, an average of 52 from each district, were involved in the pile sorting exercise. Microsoft Excel was used to process the data and produce a tab-delimited file ready for being analysed using visual Anthropac - Freelists and pile sorting software. A list of twenty food items and 15 diseases was generated separately in each district based on salience and used for pile sorting exercises. Frequently mentioned foods eaten by pregnant women were stiff porridge, rice, Irish potatoes, pumpkin leaves and ripe bananas with variation across districts.

The study team explained the intent of the project and the pile sorting activity to participants. Fifteen to 20 cards written with a card number on one side and names of the diseases or foods on the other side were used. Participants were requested to engage in four different sorting activities namely:

1. Unstructured sorting of foods,
2. Unstructured sorting of diseases
3. Structure sorting of diseases based on severity of diseases
4. Identification of diseases related to anaemia.

Participants were asked to put cards into different piles during unstructured activity and to provide explanations for assigning a card to a specific group chosen by the researcher based on the convenience of the participants.

### In-Depth Interviews

In-depth interviews were conducted with health workers and women aged 18–49 years in four districts of the Mbeya region. The four districts i.e. Mbeya DC, Mbarali, Busokelo, and Kyela were purposively selected. In each district, three health facilities were selected and one to two health workers working in ANC participated in in-depth interviews (IDI). In Mbeya DC, the facilities were ILembo, Mageuzi, and Simambwe Health facilities; In Mbarali DC the facilities were Igurusi, Madibira Mahango, and Wimba Mahango; In Busokelo, we had Kibole, Luteba, and Ikamambande health facilities and from Kyela was Ndobo, Kilasilo, and Ndandalo health facilities. These health facilities were from the same villages where phase one and two community data collection were done. In each village, approximately five to six women aged 18–49 years were purposively selected to participate in the in-depth/unstructured interview. Initially the aim was to reach five women per village but in some areas the number was low due to heavy rainfall.

The selection was guided by community health works. The IDI was done to understand the participants' attitudes towards nutrition and nutrition-related illnesses.

A total of 76 IDI were conducted in all of the four districts. Out of that, 59 were IDIs conducted with women of reproductive age 18–49 years and 17 were IDIs conducted with health workers. The IDI for health workers were slightly less than expected i.e. two IDI per health facility. This was due to limited number of health workers at the facility during the day of visit and workload. **Table 1**, below, summarizes interviews done in each site.

**Table 1** Sample size for IDI

District	Village	Women IDI	Health Workers IDI
Mbarali	Igurusi	4	1
	Wimba	7	2
	Mahango	5	2
Mbeya Dc	Ilembo	6	1
	Mageuzi	4	2
	Simambwe	5	2
Kyela	NDANDALA	6	2
	Ndabo	4	1
	Kilasilo	5	1
Busekelo Dc	Ikama	5	1
	Luteba	4	1
	Kibole	4	1
	<b>Total</b>	<b>59</b>	<b>17</b>

## 3.4 Data analysis

### PHASE I

Demographic information was analyzed using STATA software to generate descriptive information. Qualitative data analysis was done by the inductive and deductive approaches using NVIVO version 12 software. For textual data, analysis followed an inductive approach to allow for emergent themes from the recorded group discussion data. Emergent themes were coded using computer NVIVO software for qualitative analysis. The codes are labels for assigning units of meaning to the information compiled during the study and which was then used to retrieve and organize data related to the research questions. Coding was guided by a formal codebook developed by the research team a priori but adaptable to emergent themes. The coded text was extracted and interpreted in light of the study objective/aims and then presented using quotes as appropriate.

## PHASE II

### Free Listing and Pile Sorting

Data entry and processing as done with Microsoft Excel and analysis done using Visual Anthropac 1.1 pile sorting software. Pile sort distance matrices produced by Anthropac were analysed using cluster analysis and multidimensional scaling to demonstrate either the hierarchical relationships of variables to one another in multidimensional space.

### In-Depth Interviews

Qualitative data analysis was done by the inductive and deductive approaches using NVIVO version 12 software. Emergent themes were coded using computer NVIVO software for qualitative analysis. The codes are labels for assigning units of meaning to the information compiled during the study and which was then used to retrieve and organize data related to the research questions. Coding was guided by a formal codebook developed by the research team a priori but adaptable to emergent themes. The coded text was extracted and interpreted in light of the study objective/aims and then presented using quotes as appropriate.





## Number of Interviews Conducted

**Table 2** gives a summary of the number of interview sessions conducted. A total of 37 sessions were done, 20 being FGD with pregnant and lactating mothers (an average of 5 from each district) and 17 were participatory workshops (4 with elderly people, 4 with fathers, and 9 with mothers).

**Table 2** *Number of interview session done by district and session type*

Type of interview session	Busokelo DC	Kyela DC	Mbarali DC	Mbeya DC	Total
FGD- pregnant and lactating mothers	5	5	5	5	20
Participatory elderly people	1	1	1	1	4
Participatory fathers	1	1	1	1	4
Participatory mothers	2	2	2	3	9

## Characteristics of Respondents for The Interview Sessions.

The details of the study population are presented in **Table 3**. A total of 384 people participated in the data collection from all four districts combine with the majority, 175 (45.6%) being involved in the FGD's. A half of these respondents were aged between 25–49 years. Nearly 60% of study respondents attained primary education as their highest level of education and 74.7% were either married or living with a partner as wife and husband.

**Table 3** *Demographic characteristics of study participants.*

Parameter	Districts				Total
Session	Busokelo DC N (%)	Kyela DC N (%)	Mbarali DC N (%)	Mbeya DC N (%)	Total
FGD- pregnant and lactating mothers	41 (48.8)	44 (47.3)	47 (45.2)	43 (41.8)	175 (45.6)
Participatory elderly people	12 (14.3)	13 (14.0)	10 (9.6)	9 (8.7)	44 (11.5)
Participatory fathers	9 (10.7)	14 (15.1)	16 (15.4)	13 (12.6)	52 (13.5)
Participatory mothers	22 (22.2)	22 (23.7)	31 (29.8)	38 (36.9)	113 (29.4)
Age of respondents (years)					
18–24	27 (32.1)	33 (35.5)	28 (26.9)	48 (46.6)	136 (35.4)
25–49	45 (53.6)	46 (49.5)	60 (57.7)	46 (44.7)	197 (51.3)
50+	12 (14.3)	14 (15.1)	16 (15.4)	9 (8.7)	51 (13.3)
Education level					
No education	7 (8.3)	8 (8.6)	24 (23.3)	9 (8.7)	48 (12.5)
Primary education	58 (69.1)	54 (58.1)	62 (60.2)	55 (53.4)	229 (59.8)

Secondary education	19 (22.6)	28 (30.11)	17 (16.5)	36 (35.0)	100 (26.1)
College/university	0 (0.0)	3 (3.23)	0 (0.0)	3 (2.9)	6 (1.57)
<b>Occupation</b>					
Agriculture/livestock keeping	69 (82.1)	75 (80.7)	90 (86.5)	69 (67.0)	303 (78.9)
Business	14 (16.7)	9 (9.7)	8 (7.7)	19 (18.5)	50 (13.0)
Employed	0 (0.0)	1 (1.1)	1 (1.0)	1 (1.0)	3 (1.0)
Housewife	1 (1.2)	8 (8.6)	5 (4.8)	14 (13.6)	28 (7.3)
<b>Marital status</b>					
Single	13 (15.5)	17 (18.3)	7 (6.7)	18 (17.5)	55 (14.3)
Married	62 (73.8)	66 (71.0)	85 (81.7)	74 (71.8)	287 (74.7)
Widowed/separated	7 (8.3)	10 (10.7)	8 (7.7)	8 (7.8)	33 (8.6)
Living together with partner	2 (2.4)	0 (0.0)	4 (3.9)	3 (2.9)	9 (2.3)

## 4.1 Focus Group Discussions

### Challenges and Experiences During Pregnancy

The study findings revealed that pregnant women experienced several challenges during pregnancy. Some respondents mentioned distance to the health facility and were compelled to travel long distances to the facility to access professional health care and maternal health services. This, according to the women, not only discourages them from seeking maternal health information from skilled health care providers but also affected their utilization of professional health care. Women also expressed that besides the distance, pregnancy posed several individual challenges that varied across. Some women experienced the loss of appetite, nausea, vaginal bleeding, swelling of legs, periodic fever and excessive tiredness. Some had experienced anemia, dizziness. The most common problem mentioned was swelling of legs, dizziness, nausea, and anaemia.

*“When I was pregnant, I had many challenges including vaginal bleeding for the entire period of pregnancy. I was also feeling dizzy and nausea to the extent that I could not eat properly”*  
(Kyela\_Kilasilo\_pregnant and lactating mother’s\_FGD\_21-11-2020).

Another participant added:

*“Most of the time I was feeling dizzy and had anaemia”*  
(Busokelo\_Kibole\_pregnant and lactating mothers\_FGD\_28-11-2020).

### Perception About Iron and Folic Acid

Mothers provided their perception about Iron and Folic Acid and other multiple micronutrient supplementations. Most of the interviewed mothers acknowledged that IFAS is good for them as it helps in anaemia prevention and makes the child healthier. The majority were also aware that IFAS should be taken one tablet daily until delivery. Several quotes indicate varied thoughts.

*“IFAS increases blood in our body and should be taken daily”*  
(Busekelo\_Kibole\_pregnant and lactating mothers\_FGD\_28-11-2020).

Another participant added:

*“The tablets increase blood besides vegetables that also contributes to an increase in blood. These tables also strengthen child’s body parts in-utero and after birth”*  
(Busekelo\_Luteba\_pregnant and lactating mothers\_FGD\_26-11-2020).

Participants from Kyela added that IFAS besides preventing anaemia, strengthens maternal and child bones and said:

*“Those red tablets are meant to increase blood during pregnancy and also to improve maternal and child’s bones”* (Kyela\_Ndobo\_FGD\_24-11-2020).

In Igurusi village, mothers knew that IFAS makes the women strong, prevent illnesses and build the body as said:

*“Those red tablets make the mother strong which is necessary for her daily work, prevent illnesses and build her body”*  
(Mbarali DC Igurusi 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 lost blood”* (Mbarali DC Mahango FGD\_pregnant and Lactating Mother\_ 27.11.2020).

One woman from Busekelo was able to point out that IFAS also prevents spina bifida and 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\_27-11-2020).

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 mothers\_21-11-2020).

## Perception of the Use of Iron and Folic Acid Supplements

Many of the FGD participants reported that they usually take IFAS given from the health facilities regardless of the challenges because of the awareness of the effect of not taking it. They reported that the supplements were given to suffice one-month period since pregnant women were given a one-month appointment. Few pregnant mothers were given IFAS tablets to cover three months period. The majority also knew that they were supposed to take one tablet daily but with varied explanations about the ideal time to swallow the tablet. Several quotes reflect the perception on use:

*“They said we should swallow one tablet every day, meaning that we may take it in the morning or evening. What matters most is that you must take one tablet per day”*  
(Mbeya\_Mbeyavijini\_FGD\_pregnant and lactating mothers\_19\_11\_2020).

Several participants also reported taking IFAS after a meal and when going to bed.

*“They told us to eat first before taking the tablet”* (Busokelo\_Ikamambande\_FGD\_27-11-2020).

Another participant added:

*“I was using two tablets daily and was advised to swallow at night, before bed”  
(Mbeya DC\_Mageuzi\_FGD\_pregnant and lactating mothers\_ 19.11.2020)*

Although most participants agreed on taking one IFAS daily, a participant from Busekelo 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 taking Haemoglobin measurement, I was advised to take two tablets daily because I had anaemia”  
(Busekelo\_Kibole\_Pregnant and lactating mothers\_FGD\_28-11-2020).*

Another similar piece of information was raised by two participants from Mageuzi and Ikamambande villages as said:

*“We were advised to take two tablets early in the morning daily to prevent anaemia” (Mbeya DC Mageuzi FGD pregnant and lactating mothers 19.11.2020)*

*“I was advised to take two tablets, one tablet around 8:00 AM and another around 8:00 PM”  
(Busokelo\_Ikamambande\_FGD\_27-11-2020).*

In some cases, participants were advised to start using IFAS when they were three months pregnant until nine months.

*“We have to start using IFAS when we are three months pregnant until nine months”  
Busokelo\_Kibole\_pregnant and lactating mothers\_FGD\_28-11-2020).*

Several participants swallowed IFAS with water, but few expressed different ways of swallowing especially for those who felt nausea.

*“Myself I was swallowing it with water but it leaves irritating smell in my throat, I then take sugar to reduce that effect”  
(Busekelo\_Luteba\_Pregnant and lactating mothers\_FGD\_26-11-2020).*

There were some instances where additional information was provided to the pregnant mothers when given supplements. One participant from Ikamambande village was advised to take the IFAS table together with Pepsi only when felt nausea as stated:

*“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\_27-11-2020).*

Others took lemon or chewing gums to mask the smell and taste of IFAS.

*“After swallowing IFAS, I must 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 PM but also I make sure there is a piece of lemon to take immediately”  
(Mbarali DC Mahango\_FGD\_ Pregnant and lactating women”\_5\_12\_2020).*



## Alternative Methods Used When IFAS is Not Available

Pregnant mothers had several alternatives when supplements were not available or when they experienced challenges of using IFAS due to nausea. Most of the participants stated that they opted to eat vegetables (greens) like potato leaves, amaranthus, pumpkin leaves and aloevera.

*“I eat vegetables like potato leaves as an alternative to IFAS”*

*(Busekelo\_Kibole\_pregnant and lactating mothers\_FGD\_28-11-2020).*

Other participants added:

*“There are 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 Aloevera as an alternative to IFAS.

*“Aloevera leaves increases blood, I take one cup of aloevera juice when going to bed”*

*(Luteba\_Busokelo\_pregnant and lactating mothers\_FGD\_26-11-2020).*

Others reported taking fruits and vegetables together.

*“When IFAS are out of stock, we use amaranths together with fruits”*

*(Mahango\_Mbarali DC\_FGD\_pregnant and lactating mothers\_5\_12\_2020).*

Some participants were using fruits only such as guava, avocado and local fruits known as “mafuyurisi”. There was 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 27\_11\_2020).*

## Challenges of Using the Available IFAS

During the interviews, many challenges and complaints associated with the use of the available IFAS among pregnant women were revealed. These include vomiting, nausea, dizziness, sweating, unappealing odor, and flavor and taste. Fearing of using IFAS during pregnancy was also presented during the discussion. Women had expressed fear of the use of IFAS during pregnancy because it increases blood. Women said that excessive blood in the body could lead to negative consequences particularly excessive bleeding during delivery. In addition, body weakness and tiredness were reported as other challenging experiences when using IFAS during pregnancy. Some mothers reported:

*“I don’t like them at all. The challenges start when putting these tablets in the mouth, they smell bad and makes me feel nausea and sometimes I vomit”*

*(Busekelo\_Luteba\_pregnant and lactating mothers\_FGD\_26-11-2020).*

*“I experienced nausea however, the challenges on the use of the IFAS differs from one person and another. Other times I experienced body weakness, tiredness and sweating after using the IFAS. Also, the odor is not impressive”*

*(Busekelo DC\_Luteba\_FGD: pregnant and lactating mothers\_26-11-2020).*

Another woman added:

***“Most women are not using IFAS because they do fear to experience an excessive bleeding during delivery”***

*(Busokelo DC\_Kibole\_FGD: pregnant Women and Lactating Mothers\_28-11-2020\_PSU).*

Despite the challenges reported, some participants pointed out that, the IFAS tablets were good and do not bring any challenges on the use and they loved it.

***“I didn’t see any challenges when using the IFAS tablets like nausea. Once the right time prescribed by a nurse for taking the tablets comes, I swallow it”***

*(Mbeya DC\_Mageuzi\_FGD\_ pregnant women and lactating mothers\_19\_11\_2020).*

Another concern was that IFAS must be swallowed after eating and some families had food shortages.

***“I must eat before swallowing the tablet and sometimes you need to swallow it very fast so as not to feel the sweet taste of the coated IFAS. At times not everyone has food”***

*(Mbarali DC\_ Mahango\_FGD\_ pregnant and lactating mothers\_27\_12\_2020).*

## **Accessibility of IFAS**

During the interviews, iron-folic acid supplementation (IFAS) appeared to be accessible during pregnancy. During the discussion, the majority of interviewed women revealed that IFAS was available and accessed from the health facilities including dispensaries and health centers and was also provided for free. Most of the participants commented that IFAS was usually provided to pregnant women on the first day of the ANC visit. Despite being provided for free from the health facilities, the out of the stock was mentioned as one major challenge associated with access to IFAS. Participants commented on the availability and accessibility of IFAS as quoted here:

***“We receive IFAS from health centers or dispensaries during the first ANC visit and continue to receive during the second visit even when you have the remaining tablets”***

*(Busokelo\_Ikamambande\_FGD\_ pregnant women and lactating mothers\_27\_11\_2020).*

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 women and lactating mothers\_27\_11\_2020).*

In other villages, women opted to buy IFAS from drug stores when was not available at the health facilities. This was also revealed during the discussion at Wimba village in Mbarali DC, as said:

***“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 from drug stores”***

*(Mbarali DC\_Wimba\_FGD: pregnant women and Lactating mothers\_25\_11\_2020).*

In Kyela participants raised the issue of costs when taught to buy IFAS as said:

***“IFAS costs two thousand Tanzania shillings for a single blister, this is expensive for us”***

*(Kyela\_Kilasilo\_FGD: pregnant women and lactating mothers \_21-11-2020).*

Although facilities are supposed to provide IFAS free to pregnant women, in Busekelo, some facilities were selling IFAS to pregnant women as quoted:

*“I was told to pay eight thousand to access IFAS at the health center”.*

*(Busekelo\_Ikamambande\_FGD\_ Pregnant Women and Lactating Mothers\_27-11-2020).*

## Ways to Promote MMS Among Pregnant Mothers

Findings from the FGD’s reveals that the majority of the respondents mentioned different types to reach pregnant mothers with information. One dominant source reported was health professionals as said:

*“We normally get all necessary information from the health facilities”*

*(Ndobo\_Kyela \_FGD\_ pregnant and lactating mothers\_24-11-2020).*

The health facilities mentioned include dispensaries and health centers. Other methods mentioned were radio, magazine, television, and village meetings. For example, one respondent pointed out that they get information through women’s groups. These groups were created at the village level to support education on maternal health including supplements as said:

*“From health facilities and sometimes other sources. For example, here in Kibole we have women groups created specifically to discuss maternal issues including supplements”*

*(Busokelo\_Kibole\_ pregnant and lactating mother’s\_FGD\_28-11-2020\_PSU).*

During the discussions, it was mentioned that women also get information from the mobile phone network. A participant in one of the FGDs pointed out that:

*“We do get some information from mobile phone networks. When you have a mobile number and a bandle, you may register to get information about health and other things you want to learn. You just need to write what you want”*

*(Mbarali\_Madibira-Mahango \_pregnant and lactating mothers\_FGD\_26-11-2020).*

## Ways of Reaching Adolescents with MMS Information

Unlike mothers, different ways were suggested to reach adolescents. The participants pointed out that the main means of reaching pregnant adolescents was through their immediate family members including their mothers, grandmothers, mothers-in-law, their spouses/boyfriends, and other female relatives. The women specifically mentioned that they also want health education to be provided through schools for those who are still in schools with ages ranging from 10 to 19 years old. Other sources were television, adolescent groups, village meetings, mobile phone, radio programs, signs, and posters placed in different locations. Also, findings reveal that adolescents receives information from non-professional health care workers, particularly village chairman/village executive officers. Several quotes reflect:

*“We advise our girls because they are young, we normally do so because there are main challenges out there like early pregnancy”*

*(Mbeya DC\_Simambwe\_FGD\_ pregnant and lactating mother’s\_21\_11\_2020).*

*“I think schools will be the best place to reach adolescents ages 10-19 years because a large proportion is at school at this age. The government should also hold sessions in the community to reach out to those who are out of school. The education provided should insist on reproductive health and emphasize early ANC visits when they are pregnant. In addition, brochures should be distributed in schools since the majority can read”*

*(Mahango\_Mbarali\_FGD\_ pregnant and lactating mother’s\_5\_12\_2020).*

*“We may reach them through radio or television. Adolescents love watching movies, some adverts may be incorporated, this will help”*

*(Mbarali DC Ilgurusi FGD\_pregnant and lactating mothers\_ 24\_11\_2020).*

*“I know in our village, village chairs hold several meetings with adolescents. Health and re-production education should be presented there”*

*Ndobo\_Kyela\_FGD\_ pregnant and lactating mothers\_ 24\_11\_2020).*

## Ways to Reach Partners with MMs Information

Partner’s involvement was said to be important since most decisions and financial support comes from partner/husband. Participants felt that when they are informed and involved, their roles are to support pregnant mothers to adhere to all instructions provided as described:

*“This is one best way of reaching women. When a man is well informed and gains enough understanding, tends to respect and priorities their wives. They will also advise pregnant women on the importance of swallowing the tablets and will buy healthy foods”*

*(Mahango\_ Mbarali DC FGD pregnant and lactating mothers\_ 27.11.2020).*

The preferred ways of reaching partners varied. Participants felt that radio, village public announcements, seminars and village meetings will be effective in reaching out to men. They also proposed to use pictures or cards or flipcharts to present the information.

*“Cars with the speaker for education at the community will catch their attention*

*(Mahango\_Mbarali Dc\_FGD\_ pregnant and lactating mothers\_5\_12\_2021).*

## 4.2 Participatory Workshop

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### Taste and Size of the New MMS Sample Tablet

The participants had different views and comments when it came to the taste of the new MMS tablets across all districts. The majority of the participants said the taste of MMS tablets was good and it is associated with some coldness/soothing effects which made them enjoy during swallowing as reported:

*“This tablet does have a good taste. When I tasted it, I felt some coldness in my throat, as you throwback when we were at school, we were given some drops (vaccination) in the mouth. The vaccination was not that bitter and is the same as this tablet”*

*(Ikamambande Busokelo\_pregnant and lactating mothers).*

The size of the tablet was said to have positive and negative influences on the users due to different perceptions during swallowing. Few participants suggested reducing the size of the tablet as mentioned:

*“I think the tablets need to be reduced because the smaller the size the easy it can be swallowed and will prevent the likelihood of stacking in the throat. The big-sized tablet makes it difficult in taking medication”* (Ikamambande Busokelo\_participatory fathers).

In Kilosa, mothers also expressed the need to reduce the size as emphasized:

*“The size of the tablet should be reduced because it is too big, they should resize so as it can be like piriton (drug) to facilitate swallowing”* (Kilasilo Kyela\_participatory fathers).



Others targeted pregnant women who skip taking IFAS by saying:

*“The tablet should be reduced to help the women who skip taking IFAS to swallow it easy”  
(Ikamambande Busokelo\_participatory father).*

Most of the pregnant and lactating mothers from Ikamambande Busekelo agreed with MMS tablet size although others felt that there should be different forms as argued:

*“I agree with the size of the tablet, but they should manufacture the same in liquid-form”  
(Ikamambande Busokelo\_Pregnant and lactating mother).*

## MMS Suggested Names

Participants were supposed to suggest a name(s) that can capture the attention of users (pregnant mothers) and also can be used to sensitize other women to use the supplements. These names were mentioned in Swahili and some native languages and English meanings were provided. Sixteen names were proposed but two names became dominant “virutubisho vya mama mjamzito” and “virutubishi lishe”.

**Table 4** Suggested names on the tablets.

S/N	Suggested Swahili name for the tablet	English translation
1.	<b>Kitulo</b>	A name of Tanzania national park located at southern highland
2.	Mama mjamzito	Pregnant mother
3.	Tusaidie Mungu	God help us
4.	Damu	Blood
5.	Umoja	Unity
6.	Kiongeza damu	Blood enhancer
7.	Virutubisho vya mama mjamzito	Supplements for pregnant mothers
8.	Mama na mtoto	Mother and infant
9.	Mkombozi wa akina mama	Mothers saviour
10.	Tone la damu	Blood drop
11.	Kiburudisho cha mama	Mothers refresher
12.	Mbozyo	Traditional medicine for curing fever
13.	Nshamamu	Something with a reddish color
14.	Halali	Valid
15.	Mageuzi	Evolution
16.	Virutubisho lishe	Nutritional supplements

## REASONS FOR THE SELECTED NAMES

The name “virutubisho vya mama mjamzito” was selected because the tablets have vitamins and minerals for pregnant mothers and unborn babies.

*I would like to call them nutrients for pregnant mothers because it contains a lot of vitamins which helps the fetal brain development and safe delivery. It does increase blood too”  
(Ndandalo Kyela\_pregnant and lactating mothers).*

Another participant added:

*“They have a good use, when you swallow, they provide protein in our body”  
(Ndandalo Kyela\_Pregnant and lactating mothers).*

Others suggested the tablet be named blood drop because it helps to process and replace blood lost during delivery. They emphasized that the problem of blood loss during delivery won't result in anemia if women are using effectively the tablets during all the trimesters of pregnancy. One of them said that:

*“I suggest the tablet to be called blood drop, the name is attractive and when considering blood loss during delivery, it creates attention to pregnant mothers to use it to avoid the situation. So, when a mother sees blood drop during delivery, she can remember the tablets and also the name attracts attention” (Kilasilo Kyela\_Participator fathers).*

Few participants felt that the name Savior is excellent as will bring changes to the targeted population and even reduce negative attitudes in the communities as proposed:

*“I'm suggesting it to be called a savior, simply because those pregnant mothers with a low level of education find difficult to understand FeFO. So, naming the tablet savior will facilitate the situation as it saves life” (Mageuzi Mbeya DC\_pregnant and lactating mother).*

Also, few local names were suggested and were thought to have bigger impacts on the community if used properly.

*“I would suggest the name of the tablet to be Mbozyo. Mbozyo are the traditional medicine used to relieve fever through drinking their water made from grounded roots of Mbozya”  
(Simambwe Mbeya DC\_Pregnant and lactating mothers).*

Not all the participants were interested to change the name of the tablets. Some of them preferred to remain with the same i.e. IFAs or FeFo.

*“I would prefer the name to remain as it used to be (FeFO), because the tablets have been known with the same name, changing a name will bring no influence to the users, so it's better to remain with old names” (Mahango Mbarali DC\_Pregnant and lactating mother).*

Another participant added:

*“We prefer the name to remain because we are used to it and if anyone who doesn't know goes to the pharmacy and just say FeFo or look for reddish color tablets available at the drug store” (Mahango Mbarali DC\_Pregnant and lactating mother).*

## MMS Suggested Colour

Colour can influence the whole process of acceptability and palatability. We as humans do differ when it comes to colour selection. The same applied when it came to the MMS tablets. The majority liked red, green, and white colours to be used for MMS tablets. The following were the views on why they suggested so:

*“I suggest the color to remain red because people are used to it, changing the color might make them think it is not MMS tablet anymore”  
(Ikamambande Busokelo DC\_Participatory father).*

Another one added:

***“First, I’m a fan of red tablets because I once used them and they helped me a lot to recover. So even pregnant mothers need to use it because it will help them to regain blood which is red” (Ikamambande Busokelo DC\_Participatory father).***

Green is another colour that most of the participants suggested. The reason behind was that red colour causes nausea and wanted a change as said:

***“I love green because the colour is attracting. The colour is also used in family planning pills so if the supplements use this color, I will just feel fine, red colour makes us feel nausea” (Ndandalo Kyela DC\_pregnant and lactating mothers).***

Fathers also proposed green color to be used instead of red.

***“I would love the tablets to have green colour, this is because we love nature. Besides that, most of the traditional drugs are green as they are extracted from plants” (Kilassilo Kyela DC\_Participatory father).***

Other participants needed green color because most of the vegetables are green and when they go to the clinic, they are advised to eat more vegetables as an intervention to increase blood flow in their body during pregnancy.

***“I’m suggesting green color because even the vegetables we are eating are green. This will make us remember their importance” (Simambwe Mbeya DC\_Pregnant and lactating mothers).***

Another participant from Igurusi Mbarali DC suggested green:

***“I’m suggesting green because first, it attracts, then it is cool compared to red which sometimes indicates blood spill. Due to this reason, most of the pregnant mothers feel disturbed with red, it’s like they are swallowing blood” (Igurusi Mbarali DC\_Participatory father).***

Few participants liked and suggested white color due to their reasons. Most of the prominent reason is that, if MMS tablet looks white it will resemble many other drugs in the store and those accessed in the health facilities and shops. Their opinions were:

***“I’m proposing white color to be used because it is good with no smell and it doesn’t bring nausea. Red tablets have a strong smell when you opened the package creating a hard environment to swallow” (Ndandalo Kyela DC\_pregnant and lactating mother).***

Another one added:

***“I’m also proposing white color because, people are used to white colour tablets and reflect cleanness. Also, most tablets that are white color has no smell” (Ndandalo Kyela DC\_pregnant and lactating mother).***

## Slogan Suggestions

Mothers acknowledged the relevance of using the slogan. The slogan was said to have a long-term impact that the name of the project or program might not have. Participants come up with different suggestions about slogans to be used and gave the reason attached to the selection. Seventeen slogans were proposed. After voting, vitamin bora sana (super vitamin) becomes number one followed by okoa okoa mtoto (save mom save child). The slogans are presented in the table below:

**Table 5** Suggested slogan to be used to promote MMS

S/N	Suggested slogan in Swahili words	English translation
1.	Boresha afya ya mama na mtoto	Improve maternal and child health
2.	Boresha afya ya mama mjamzito	Improve the health of a pregnant woman
3.	Meza dawa ikusaidie	Take medication for self-help
4.	Jipe moyo	Give yourself hope
5.	Karibu mama mjamzito	Welcome pregnant mother
6.	Virutubisho bora kwa akina mama	Best supplements for mothers
7.	Dawa tosha kwa mama mjamzito	Sufficient tablet for pregnant mother
8.	Dawa salama kwa wazazi	Safe tablet for mothers
9.	Sisi tunaweza	We can
10.	Uhai wa binadamu	Human life
11.	Afya ya uzazi	Reproductive health
12.	Umuhimu wa mama mjamzito	The importance of pregnant mother
13.	Kunyweni dawa ya ukombozi	Drink the saviour tablet
14.	Jamii mwanga	Community light
15.	Mpende mtoto wako	Love your child
16.	Okoa mama okoa mtoto	Save mom save child
17.	Vitamini bora sana	Super Vitamin

## Meaning Attached to the Selected Slogan

Some selections had further explanations where the participants gave the reason for their choice. Mothers from Kyela loved “safe tablets for mothers” and said:

*“I like the slogan safe tablet for mothers. I choose the motto because the tablet is used by pregnant and lactating mothers” (Ndandalo Kyela\_pregnant and lactating mother).*

*“I’m suggesting the motto to be called improve maternal and child health. I suggested so because it will be easily understood by mother or anybody when mentioned” (Mahango Mbarali DC\_pregnant and lactating mothers).*

*“I’m suggesting the motto to be called reproductive health. Because if you say so, one understands if you use it will be useful in health for both mother and child” (Mahango MbaraliDC\_pregnant and lactating mothers).*



*“I would suggest the slogan love for a child because, when you take that tablet for swallowing you will automatically love your unborn child”*

*(Simambwe Mbeya DC\_pregnant and lactating mothers).*

*“I think to Save the mother, Save the child tells it all, the drugs are meant to save the life of both” (Simambwe Mbeya DC\_ pregnant and lactating mothers).*

## Suggested Logo

Any graphic mark, symbol, or stylized name used to identify a product is considered as a logo. A logo should be distinctive and appropriate to convey a certain message or intervention. For easy identification of the products, most of the owners tend to have unique logos to maintain their reputation. Looking at our study, the study participants were required to suggest the best logo for the MMS tablets for the aim of making them easily identified. The majority of the interviewed participants suggested a picture of a pregnant mother swallowing the tablet:

*“I would like if a pregnant mother appears there, she should be shown swallowing these tablets because they are made for pregnant mothers”*

*(Ndandalo Kyela\_Pregnant and lactating mother).*

Another participant added some view on this:

*“I would like if a picture of a pregnant mother is put there with a nurse beside giving a tablet to the mother” (Ndandalo Kyela\_Pregnant and lactating mother).*

Others suggested to have a lactating mother on the logo:

*“I would like a lactating mother to appear there. The mothers should be breastfeeding her child” (Ndandalo Kyela\_Pregnant and lactating mother)*

## MMS Packaging

Participants were given eleven printed samples of the packages to select. There was varied selection across 17 participatory groups. After voting, package number 1 and number 3 were selected most. The reasons for their choices was that it contains pregnant women and a love sign which gives a clear meaning to both women and their partners. The picture emphasizes the need to care for pregnant women. It also helps the unschooling people to understand easily and the light green colour is more appealing. Participants proposed few alterations to the package like the title must be bolded and Kwahili language to be used. For package number 3 participants felt that it captures all needed information but they recommended improving the picture i.e. instead of being a cartoon-like, the same picture as that presented in number 1 should be used as it feels like a real picture. Also, participant liked the pink colour of package 3. Overall, package number 3 was selected among others.



**Package No. 1**



**Package No. 3**

## New MMS Colour Perception

Findings from the participatory workshop reveal that the colour of the new MMS was liked by many participants but few members preferred the previous red colour since it has been in the market for a very long time and pregnant mothers know them even those who were unable to read and write.

*“I love this new tablet, but we are used to red colour. Pregnant mothers are used to red colour tablets even those who cannot read”*

*(Ikamambande\_Busokelo\_pregnant and lactating mothers\_semina\_30-11-2020).*

## 4.3 Market Survey Report

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Overall, 47 drug stores were visited, 6 from Mbeya DC, 14 from Mbarali DC, 8 from Busekelo, and 19 from Kyela district. Out of 47 facilities visited, 30 had at least one multiple micronutrient supplements (MMS). Twenty different brands of MMS were found in the study districts. Most of these supplements were used by pregnant mothers except liquid supplements (Hemovit, Feroton, Megavit, Z and Becoshell) which were commonly used by children. The majority of these supplements were purchased by women except Becoshell, Zenery and Megavit which were purchases by both mothers and fathers. The drug contents, price range, and the number of drugs obtained from Mbeya DC, Mbarali, Busekelo, and Kyela district are presented below (Table 6). The 21-century prenatal dietary supplements and Hemovit were the only products sold at a higher price compared to other products. Price mark for the majority of the MMS tablets range from 150 to 1500 and from 2000 to 7500 for liquid products per bottle. Despite most MMS being sold at a reasonable price, the purchase per week was very low and, in some cases, some drugs like Natocare were not sold for the entire week.

**Table 6** Description of MMS products (contents, price range, sell, users) found in the study districts.

SN	Picture	Contents	Price range (TSh)	Amount sold last week (Average)	frequently purchase
1		Each 5ml contains – Ferric Ammonium Citrate USP 200.00mg (Equivalent to elemental Iron 43 mg) Folic Acid BP 1.50mg Pyridoxine Hydrochloride BP, Vitamin B6 at 0.50mg Cyanocobalamin BP (Vitamin B12) 50.00mcg and Zinc Sulphate BP at 2.33mg.	Available in all districts <b>Price: 4400-7500</b> Lowest 4,400 in Mbarali and highest 7,500 in Kyela	Measured in bottles Minimum -0 Maximum- 10 Average-1.58	Women
2		Iron, Folic Acid and Vitamin B12 Formula	Found in Mbarali only <b>Price: 4600 per bottle</b>	Measured in bottles Minimum -0 Maximum-1 Average-0.6	Women
3		Each 5ml contains Vitamin A BP 5000 i.u Pyridoxine Hydrochloride BP (Vit. B6) 2 mg Colecalciferol BP (Vit. D3) BP 400 i.u Cyanocobalamin BP (Vit. B12) 5 mcg Thiamine Hydrochloride BP (Vit. B1) 3 mg Ascorbic Acid BP (Vit. C) 10 mg Riboflavin BP (Vit. B2) 0.856 mg Dexpantenol BP (D - Panthenol) 5 mg Nicotinamide BP (Vit. B3) 20 mg Pack:	Found in Mbarali <b>Price: 3000/= per bottle</b>	One bottle on average sold last week	Both men and women
4		Has magnesium, taurine and B vitamins	Found in Mbarali <b>Price: 3000/= per bottle</b>	One bottle on average sold last week	Both men and women
5		Vitamin D (100 I.u) 2.5 mcg, Vitamin E (natural source) 20 mg, Vitamin C 70 mg, Thiamin (vitamin B1) 3 mg, Riboflavin (Vitamin B2) 2 mg, Niacin 20mg, Vitamin B6 10mg, Folacin (as Folic acid) 400 mcg, Vitamin B12 6 mcg, Betacarotene (Natural source) 4.2 mg , Vitamin K 200 mcg ,Iron 20mg, Magnesium 150 mg,Zinc 15mg, Iodine 14 mcg, Copper 1 mg	<b>Price: 1000-2000 per tablet.</b> Found in Mbeya DC, Kyela and Mbarali Dc	Minimum -0 Maximum-2 Average-1.5	Women

6		B1 - Thiamine Mononitrate 242.5mg B6 - Pyridoxine HCl 250.0mg B12 -Cyanocobalamin 1.0mg	Found in Mbeya DC only <b>Price: 150 per tablet</b>	5 tablets sold in a week	Women
7		Vitamin B formula	Found in Kyela, Mbarali and Mbeya DC <b>Price: 500-800 per tablet</b>	Minimum sold 1 tablet and Maximum 90 tables	women
8		Docosahexaenoic acid (DHA) 200 mg Eicosapentaenoic acid (EPA) 40 mg (From Fish oil – natural 800 mg) Folic Acid 500 mcg Potassium Iodide 196.6 mcg Equiv. to Iodine 150 mcg	Found in Mbeya DC <b>Price: 1500 per tablet</b>	Not sold last week	Women
9		5 mg folic acid	<b>150 per tablet or 1000 per blister of ten tablets</b> Found in Mbarali DC	On average, 1 blister per week	Women
10		The sktone syrup contains folic acid, Iron, Vitamins, and Zinc	<b>5,000 per bottle</b> Found in Busekelo and Mbarali DC	Not sold in the last week	Women



11		5 mg folic acid	Found in Mbarali Price: 150 per tablet	Not sold in the last week	Women																																												
12		BECOSHEL Syrup Thiamine Hydrochloride BP (Vit. B1) 5mg Riboflavin BP (Vit. B2) 2mg Nicotinamide BP (Vit. B3) 20mg Pyridoxine Hydrochloride BP (Vit. B6) 2mg Pack:	Found in Mbarali Price: 3000/= per bottle	One bottle on average sold last week	Both men and women																																												
13	 <table border="1"><caption>Supplement Facts</caption><thead><tr><th colspan="3">Serving Size 1 Tablet</th></tr><tr><th>Amount Per Serving</th><th></th><th>% Daily Value</th></tr></thead><tbody><tr><td>Vitamin A (as 100% as Beta-Carotene)</td><td>1,200 mcg</td><td>92%</td></tr><tr><td>Vitamin C (as Ascorbic Acid)</td><td>120 mg</td><td>100%</td></tr><tr><td>Vitamin D3 (as Cholecalciferol)</td><td>10 mcg (400 IU)</td><td>67%</td></tr><tr><td>Vitamin E (as dl-alpha Tocopheryl Acetate)</td><td>13.5 mg</td><td>71%</td></tr><tr><td>Thiamin (as Thiamin Mononitrate)</td><td>1.8 mg</td><td>129%</td></tr><tr><td>Riboflavin (Vitamin B-2)</td><td>1.7 mg</td><td>106%</td></tr><tr><td>Niacin (as Niacinamide)</td><td>20 mg</td><td>111%</td></tr><tr><td>Vitamin B-6 (as Pyridoxine HCl)</td><td>2.6 mg</td><td>130%</td></tr><tr><td>Folate</td><td>1,334 mcg DFE (800 mcg Folic Acid)</td><td>222%</td></tr><tr><td>Vitamin B-12 (as Cyanocobalamin)</td><td>8 mcg</td><td>286%</td></tr><tr><td>Calcium (as Calcium Carbonate)</td><td>200 mg</td><td>15%</td></tr><tr><td>Iron (as Ferrous Fumarate)</td><td>28 mg</td><td>104%</td></tr><tr><td>Zinc (as Zinc Oxide)</td><td>25 mg</td><td>192%</td></tr></tbody></table>	Serving Size 1 Tablet			Amount Per Serving		% Daily Value	Vitamin A (as 100% as Beta-Carotene)	1,200 mcg	92%	Vitamin C (as Ascorbic Acid)	120 mg	100%	Vitamin D3 (as Cholecalciferol)	10 mcg (400 IU)	67%	Vitamin E (as dl-alpha Tocopheryl Acetate)	13.5 mg	71%	Thiamin (as Thiamin Mononitrate)	1.8 mg	129%	Riboflavin (Vitamin B-2)	1.7 mg	106%	Niacin (as Niacinamide)	20 mg	111%	Vitamin B-6 (as Pyridoxine HCl)	2.6 mg	130%	Folate	1,334 mcg DFE (800 mcg Folic Acid)	222%	Vitamin B-12 (as Cyanocobalamin)	8 mcg	286%	Calcium (as Calcium Carbonate)	200 mg	15%	Iron (as Ferrous Fumarate)	28 mg	104%	Zinc (as Zinc Oxide)	25 mg	192%	18,000 per dose Available in Mbeya DC	Not sold last week, sometimes three weeks without selling	Women
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14		Methylcobalamin-1500mcg Folic Acid- 5mg Pregabalin -75mg Alpha-lipoic acid-100mg	500 per tablet Found in Mbeya DC	Not sold last week	Women																																												

15		Not presented	Range from 2000 to 3,000 per box Found in Mbarali DC	Min-1 Maximum 2 Average of 1.5 sachets	Women
16		Not presented	<b>6,000 per bottle</b> Found in Kyela	1 bottle per week	Women
17		Green Iron and Ammonium Citrate B.P.C.1954 ==200 mg Vitamin B1 B.P == 2 mg Riboflavine B.P== 0.5 mg Vitamin B12 B.P ==2.5 mcg Nicotinamide B.P==5 mg Colour ,Flavour ,Excipients and Syrup Flavour ==5ml	Found in Mbeya DC Price: 3000	2 bottle per week on avarage	Women
18		B1, B2, B3, B6, B12, Folic Acid and Calcium are interdependent and interrelated in function	<b>500 per tablet</b> Found in Mbarali and Mbeya DC	Not sold last week	Both women and men
19		It has vitamin A, D3, and calcium.	Found in Mbeya DC <b>Price: 500 per capsules</b>	Not sold last week	Women
20		Ferrous Sulfate plus Folic AC 300 mg / 250 mcg	<b>50-100 Tsh per tablet</b> Found in Mbeya Dc, Mbarali and Kyela	0 to 180 tablets On average 60 tables were sold in the last week	Women

## 4.4 Free Listing and Pile Sorting

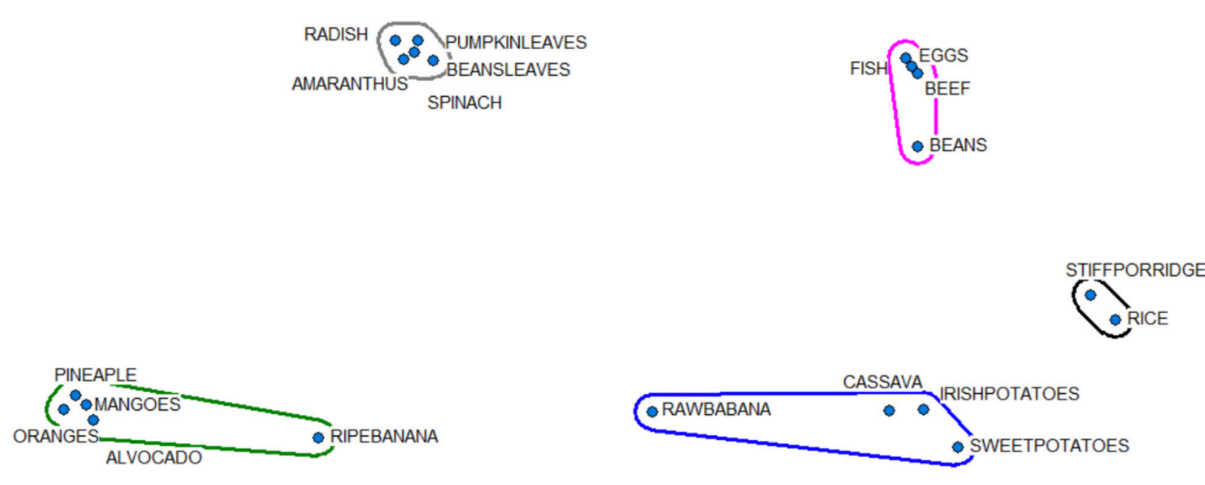
To define local food and illness classification systems within a cultural context.

A total of 143 women of reproductive age (18–49 years) were involved in the pile sorting exercise. Specifically, 40 women from Mbarali DC, 31-Mbeya DC, 29-Busekelo and 43 from Kyela DC. Results from Mbeya and Mbarali DC are presented separately while that of Kyela and Busekelo have been combined since the same list of foods and diseases generated during free listing for these districts was used for pile sorting.

### Food Classification Systems in Cultural Context

The district specific classification of food eaten by pregnant mothers are presented in multi-dimensional scaling map (**Figure 1–3**) followed by a brief description of food items for each group (**Tables 7–9**)

**Figure 1** Classification of food eaten by pregnant mothers in Mbarali DC



**Table 7** Classification of food eaten by pregnant mothers in Mbarali DC

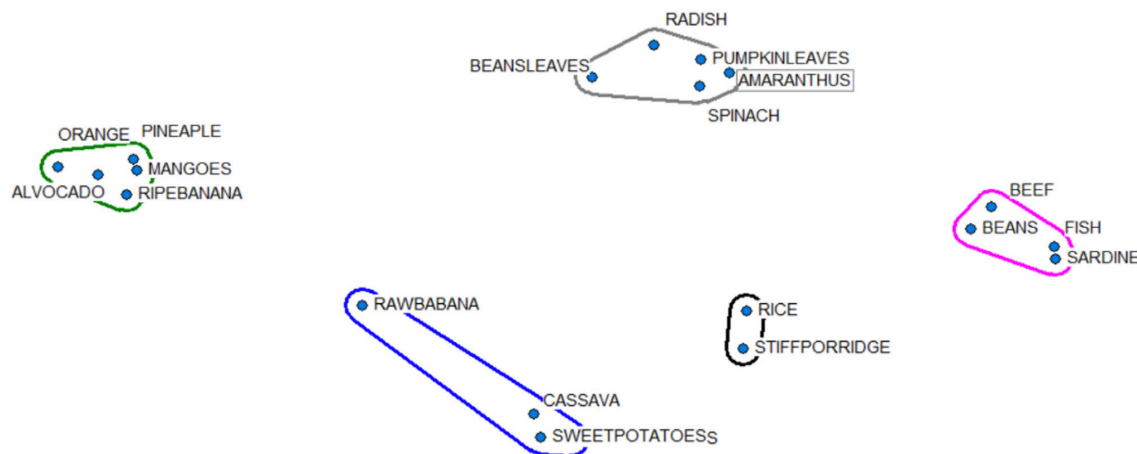
Name of the foods	Description
<b>Vegetable: Illness prevention food</b>	
Radish, beans leaves, pumpkin leaves, amaranthus, spinach	<ul style="list-style-type: none"> <li>Foods that increase blood and vitamins</li> <li>Food most grown in study settings and eaten by majority of people</li> </ul>
<b>Protein foods: Protect the body</b>	
Fish, beans, beef, eggs	Protein rich foods, make the body fits, protect the bones, protect the body against diseases, add more fat to the body
<b>Energy giving foods</b>	
Cassava, Irish potatoes, raw banana, sweet potatoes	<ul style="list-style-type: none"> <li>Fibre foods</li> <li>Energy giving foods</li> <li>Food that builds the body</li> <li>Carbohydrate rich foods</li> </ul>
Rice, stiff porridge	<ul style="list-style-type: none"> <li>Nutritious foods that give the body energy</li> <li>Carbohydrate rich foods</li> <li>Food that are rich in vitamins</li> </ul>

### Fruits: Build the body and protect skin

Orange, pineapple, mangoes, ripe banana, avocado

- Increase blood, vitamin, water and strengthening the body
- Fruits loved by the community
- Group of fruits that gives the body energy, build the body and improve mother and child health
- Group of fruits that provide nutrition needed for the unborn baby and help the baby to get energy
- Group of fruits that protect the body against diseases

**Figure 2** Classification of food eaten by pregnant mothers in Mbeya DC

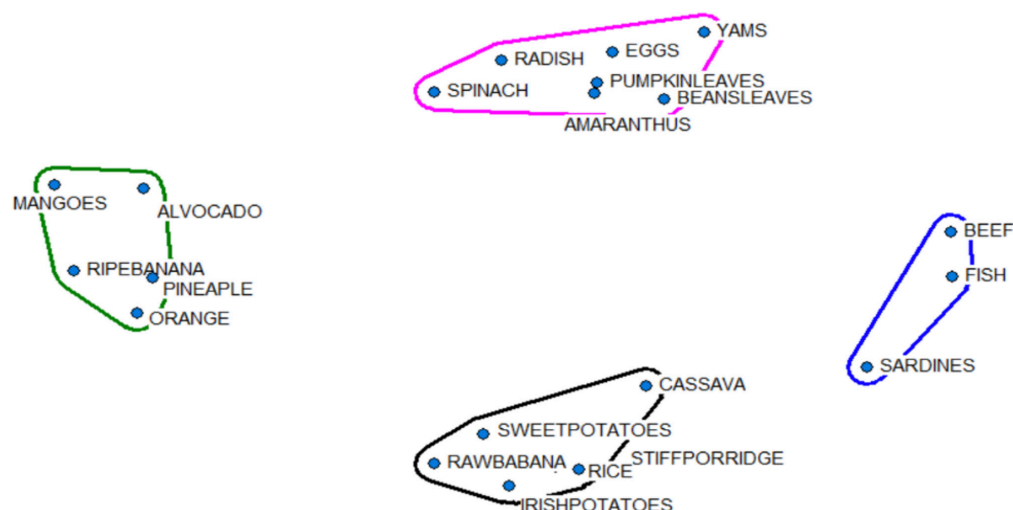


**Table 8** Description of foods items included in each group-Mbeya DC

Name of the foods	Description
<b>Vegetable: Illness prevention food</b>	
Radish, beans leaves, pumpkin leaves, amaranthus, spinach	<ul style="list-style-type: none"> <li>• Vegetable foods that increase blood, protect the body against diseases,</li> <li>• Body warming foods</li> </ul>
<b>Protein foods: Protect the body</b>	
Fish, beans, beef, sardine	Protein rich foods, make the body fits, protect the bones, protect the body against diseases, add more fat in the body
<b>Energy giving foods</b>	
Cassava, raw banana, sweet potatoes	<ul style="list-style-type: none"> <li>• Increase blood to the body</li> <li>• Sources of carbohydrate</li> <li>• Grain that gives the body energy</li> <li>• Warm the body</li> <li>• Root foods</li> </ul>
Rice, stiff porridge	<ul style="list-style-type: none"> <li>• Food rich in carbohydrate</li> <li>• Energy source foods</li> </ul>
<b>Fruits: Build the body and protect skin</b>	
Orange, pineapple, mangoes, ripe banana, avocado	<ul style="list-style-type: none"> <li>• Source of essential vitamins</li> <li>• Protect the body against disease</li> <li>• Fight against diseases</li> <li>• Increase blood</li> </ul>



**Figure 3** Classification of food eaten by pregnant mothers in Busekelo and Kyela

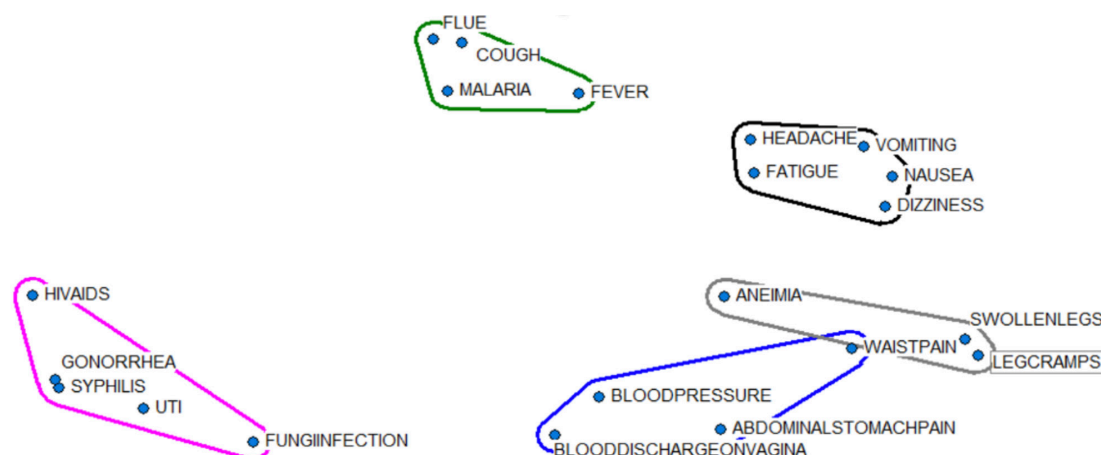


**Table 9** Description of foods items included in each group-Busekelo and Kyela

Name of the foods	Description
<b>Vegetable: Illness prevention food</b>	
Radish, beans leaves, pumpkin leaves, spinach, eggs	<ul style="list-style-type: none"> <li>• They are vegetables</li> <li>• Increase blood</li> <li>• Iron rich foods</li> <li>• Protect the body against diseases</li> </ul>
<b>Protein foods: Protect the body</b>	
Fish, beef, sardine	<ul style="list-style-type: none"> <li>• Protein rich foods, make the body fits, protect the bones, protect the body against diseases, add more fat to the body</li> <li>• Increase milk supply for breastfeeding mothers</li> <li>• They come from water bodies</li> <li>• Increase blood</li> <li>• Contain vitamins B and C</li> <li>• Gives body energy</li> <li>• Foods that are eaten by large part of the community</li> <li>• They can all be used to make soup</li> </ul>
<b>Energy giving foods</b>	
Cassava, Irish potatoes, raw banana, rice, sweet potatoes	<ul style="list-style-type: none"> <li>• Carbohydrate rich foods</li> <li>• They are health food and increase blood</li> <li>• Energy source foods</li> </ul>
<b>Fruits: Build the body and protect skin</b>	
Orange, pineapple, mangoes, ripe banana, avocado	<ul style="list-style-type: none"> <li>• Fruits that increase blood and vitamins to the body</li> <li>• Health foods that reduce toxic form the body and gives body energy</li> <li>• Protect the body against diseases</li> <li>• Food that increases production of milk among breastfeeding mothers</li> </ul>

## DISEASES AFFECTING PREGNANT WOMEN

**Figure 4** Pile sorting multi-dimensional scaling map of diseases affecting pregnant women in Busekelo and Kyela



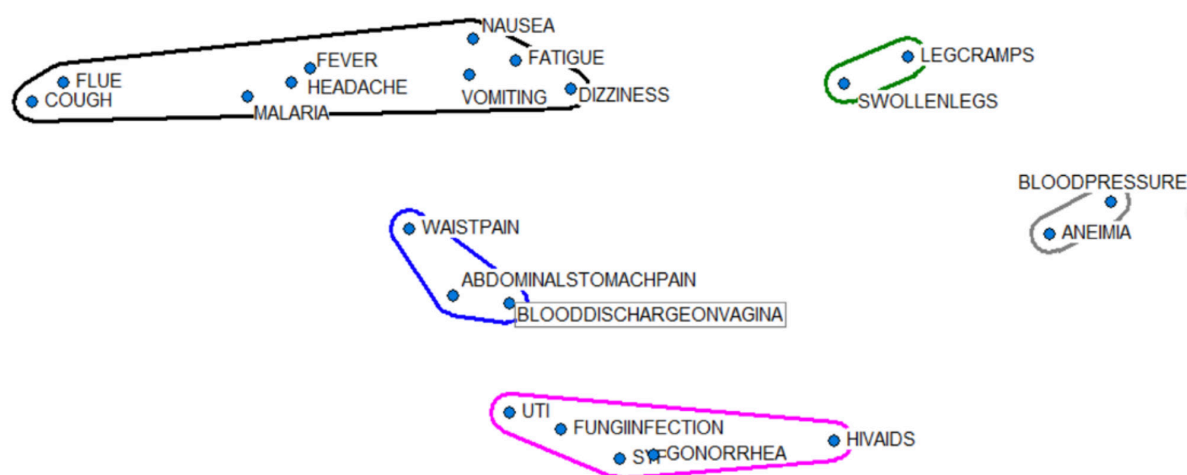
**Table 10** Description attached to diseases in the group-Busekelo and Kyela

Name of the disease	Description
Flue, cough, Malaria, Fever	<ul style="list-style-type: none"> <li>• They are infectious diseases caused by inhaling a dirty air</li> <li>• Fever/malaria related illness</li> <li>• Affect people with immune-deficient</li> <li>• Caused by change in weather condition</li> <li>• Common in cold environment</li> <li>• They dehydrate the body</li> <li>• They are treatable diseases</li> </ul>
HIV/AIDS, Syphilis, U.T.I, Fungi infection, Gonorrhoea	<ul style="list-style-type: none"> <li>• They are infectious diseases transmitted by sharing sharp objects or having unprotected sex</li> <li>• They affect reproductive organs</li> <li>• Dangerous diseases to pregnant women and can cause miscarriage</li> <li>• Diseases related with human private parts</li> <li>• They are STI's</li> </ul>
Headache, fatigue, vomiting, nausea, dizziness	<ul style="list-style-type: none"> <li>• Signs of being pregnant, common during the first trimester</li> <li>• Diseases that cause fatigue</li> <li>• Diseases caused by depression</li> <li>• Malaria related symptoms</li> <li>• Happens in pregnant women when she eats a certain type of food</li> <li>• Happens in pregnant women with low body immunity</li> </ul>
Anaemia, swollen legs, waist pain, leg cramps	<ul style="list-style-type: none"> <li>• Pregnant related illness</li> <li>• Causes pregnant women not to move</li> <li>• They are caused by insufficient blood</li> <li>• Caused by lack of certain type of nutrients</li> <li>• Legs related illness</li> <li>• Signs of high blood pressure</li> <li>• Dangerous diseases for the baby in the womb</li> </ul>

Abdominal stomach pain, blood discharge on vagina, blood pressure

- Common diseases to women
- Caused by pain of the reproductive organ
- Blood related illness
- Can causes miscarriage
- They are dangerous sign for pregnant mothers

**Figure 5** Pile sorting multi-dimensional scaling map of diseases affecting pregnant women in Mbarali

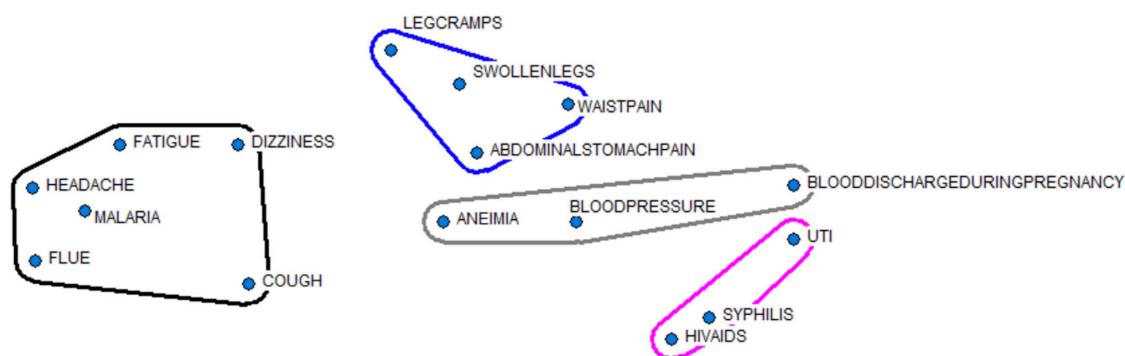


**Table 11** Description attached to diseases in the group-Mbarali

Name of the disease	Description
Leg cramps, swollen legs	<ul style="list-style-type: none"> <li>• These are danger signs to pregnant women</li> <li>• They affect old people</li> <li>• Signs of not having enough body immunity</li> <li>• Common signs among pregnant women</li> <li>• Caused by lack of protein</li> <li>• Signs of malaria</li> <li>• Occurs to individuals with high blood pressure</li> <li>• Caused by dehydration</li> <li>• Signs of sedentary lifestyle</li> </ul>
Blood pressure, anaemia	<ul style="list-style-type: none"> <li>• Signs of low or high blood content in the body</li> <li>• Blood related illness</li> <li>• They are dangerous diseases</li> <li>• Low consumption of vegetable and fruits can lead to anaemia and high blood pressure</li> <li>• High blood pressure can lead to anaemia</li> <li>• Affect individuals with HIV</li> </ul>

HIV/AIDS, U.T.I, Fungi infection, Syphilis, Gonorrhoea	<ul style="list-style-type: none"> <li>• Are sexual transmitted diseases</li> <li>• They relate with body immunity</li> <li>• Infectious diseases</li> <li>• Women get these diseases when they have sex with uncircumcised men</li> <li>• They associate with use of dirty latrines</li> <li>• They are dangerous diseases</li> <li>• Causes infections in the blood</li> </ul>
Waist pain, abdominal pain, blood discharge in the vagina	<ul style="list-style-type: none"> <li>• Common diseases to pregnant women</li> <li>• Occur during the last stage of labour</li> <li>• Affect vaginal areas</li> <li>• Occurs often when approaching the menstrual period</li> </ul>
Flue, cough, fever, headache, malaria, vomiting, dizziness, fatigue, nausea	<ul style="list-style-type: none"> <li>• Signs of malaria/fever</li> <li>• Common diseases to pregnant women</li> <li>• Happens when the baby is in the wrong position</li> </ul>

**Figure 6** Pile sorting multi-dimensional scaling map of diseases affecting pregnant women in Mbeya DC



**Table 12** Description attached to diseases in the group-Mbeya DC

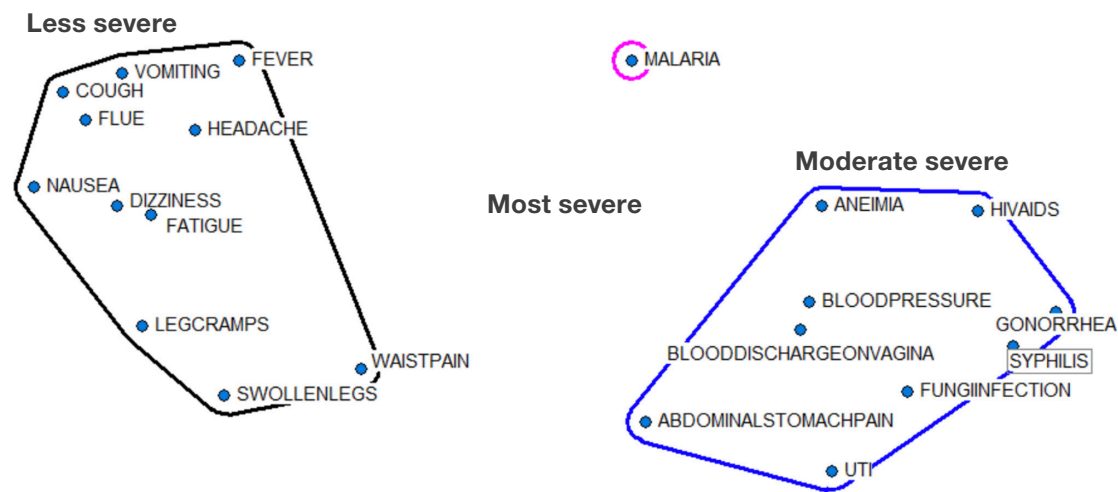
Name of the disease	Description
Fatigue, Dizziness, Headache, Malaria, Flu, Cough	<ul style="list-style-type: none"> <li>• All are respiratory tract infections</li> <li>• Affect most pregnant women,</li> <li>• Caused by poor feeding,</li> <li>• Can causes miscarriage,</li> <li>• Caused by change in weather condition</li> <li>• Are symptoms of malaria</li> </ul>
U.T.I, Syphilis, HIV/AIDS	<ul style="list-style-type: none"> <li>• These are sexual transmitted diseases.</li> <li>• Can be transmitted through blood transfusion</li> <li>• Reduce body immunity</li> <li>• Relates with reproductive system</li> </ul>
Anaemia, Blood pressure, Blood discharge during pregnancy	<ul style="list-style-type: none"> <li>• Caused by insufficient blood in the body</li> <li>• All are blood related illness</li> <li>• Common diseases to pregnant women</li> <li>• Causes dizziness</li> </ul>
Legs clamps, swollen legs, waist pain, abdominal stomach pain	<ul style="list-style-type: none"> <li>• Insufficient blood related illness</li> <li>• Common symptoms among pregnant women</li> </ul>

## Structured diseases based on illness severity

Disease severity was classified as less, moderate or most severe based on respondent views and understanding of diseases. This section present respondents' views of illness severity from for Busekelo and Kyela DC combined, Mbarali and Mbeya DC.

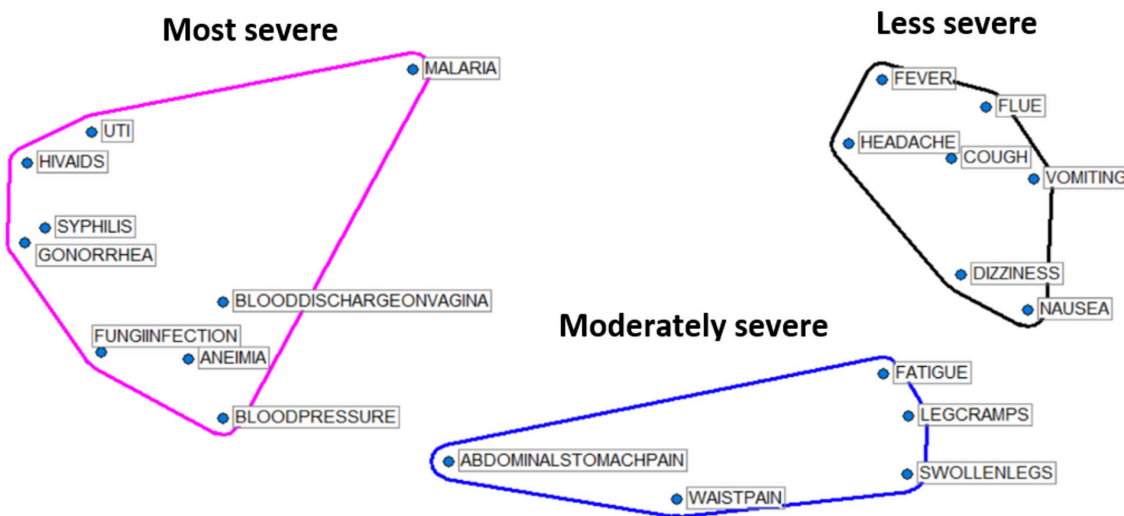
### Busekelo and Kyela DC

When participants were asked to group illness affecting pregnant women according to severity, Anaemia, BP, STI (HIV/AIDS, Syphilis, etc), Fungi infection, abdominal stomach pain were considered as moderate severe and Malaria was the most severe disease and if left untreated, may harm the mother or the baby. The less several diseases were fever, vomiting, Cough, Flue, Nausea, Fatigue, leg clams, swollen legs, dizziness and waist pain.

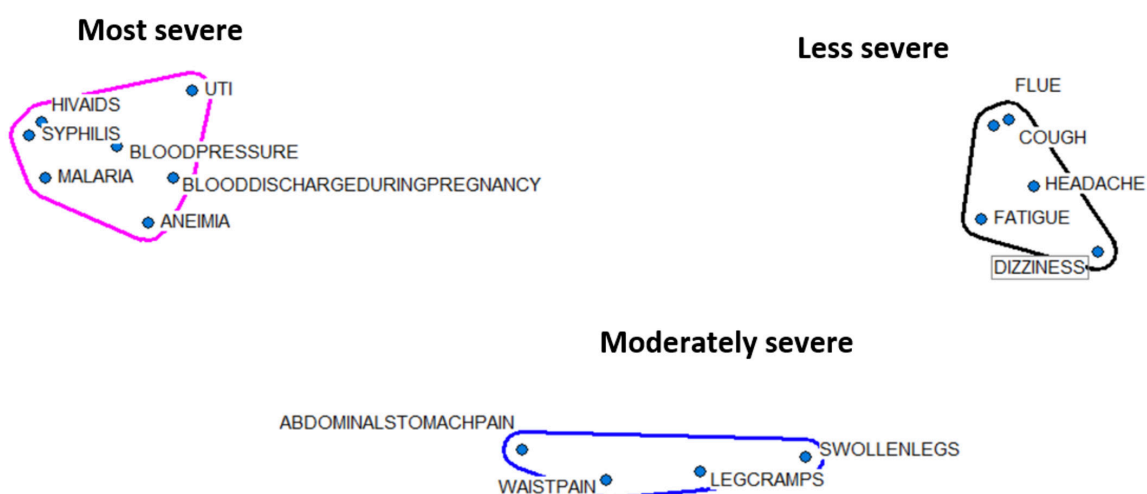


### Mbarali DC

In Mbarali DC, the disease categorization was very similar to that of Busekelo and Kyela district except for malaria which in here is termed as most severe illness and abdominal stomach pain, waist pain, fatigue, swollen legs, leg cramps as moderately severe.







### Anemia related diseases:

Participants were asked to select cards with names of diseases that are indication of symptoms of anaemia in pregnancy. The four top mentions symptoms for each district are presented in **Table 13**. Overall, dizziness and fatigue were the most commonly mentioned diseases to related with either shortage or excess blood among pregnant women.

**Table 13** Diseases that are symptoms of anaemia during pregnancy

District name	Anemic related illness (%)
Busekelo and Kyela	Dizziness (15%), Fatigue (13%), Headache (8%), Fever (8%)
Mbarali	Dizziness (13%), Fatigue, (13%), Blood discharge on vagina (10%) and swollen legs (8%)
Mbeya DC	Fatigue (13%), Blood discharge on vagina (13%), Dizziness (12%), Swollen legs (9%)

## 4.5 In-Depth Interviews

### Demographic information of the participants

The majorities of the interviewed participants aged 22–44 years (63%) and attained a primary level of education (48.8%). Most of the interviewed mothers (52.4%) were self-employed in agriculture and livestock keeping. Only five percent were employed in formal works and they represent health workers mostly. Also, eighty-two percent of all the participants interviewed were married.

### Pregnant related illnesses

During the in-depth interviews with women, perceptions about illnesses varied. The majority of the study participants mentioned illnesses like Malaria, Urinary Tract Infection abbreviated as (U.T.I), and sexually transmitted diseases (Gonorrhea, syphilis, and HIV) as the most common illnesses. Headache, edema, stomachache, and dizziness were said to be common but were thought to be a result of the pregnancy.

Diseases like candidiasis, eclampsia, typhoid, fever and anaemia were least mentioned by the study participants. Despite malaria being mentioned frequently, participants felt STDs and U.T.I as main illness. Several quotes reflect participant's views:

*“For what I see STD's and U.T.I are the common diseases. For malaria, we are always provided with bed nets during pregnancy, so STD's and U.T.I are the most dominant” (Mbarali\_Wimba Mahango\_Mother\_IDI).*

*“All I can say is U.T.I because I once suffered from U.T.I at the time when I was pregnant” (Mbarali\_Igurusi\_IDI\_Mother).*

*“Syphilis is another disease we are tested during pregnancy, people are infected with syphilis. When you are infected with syphilis, you may see blood coming out which is a sign of miscarriage” (Mbeya DC\_Ilembo\_IDI\_Mother).*

Views of health workers varied slightly from mothers. Health workers mentioned U.T.I and Malaria as the most dominant diseases in their community compared to other diseases like STDs and Eclampsia as said:

*“Malaria is a big problem in our zone. We know all diseases are dangerous, but Malaria is more dangerous, HIV and syphilis are also dangerous. However, if mothers use medication, they can deliver a healthy child” (Kyela DC\_Ndandalo\_IDI\_Health worker).*

Although malaria was reported to be prevalent, mothers feared HIV and Syphilis more. The fear was related to the fact that those diseases pass to the unborn child and may cause premature deaths and lifelong disabilities.

*“The most feared diseases are HIV and syphilis; general I can say STDs are the most feared. For example, when you are pregnant, you may have a child with infection, we also have young generation, STI destroys young generations” (Busokelo Dc\_Kibole\_IDI\_Health Worker).*

*“For us, STDs are most common diseases during pregnant. HIV, Syphilis and gonorrhea are very common. Around this area, we have good climatic condition, so Malaria is somehow less prevalent. We know Malaria cause more deaths than STI's during pregnancy, but STDs are the more prevalent diseases and may pass to the unborn babies” (Busokelo DC\_Luteba\_IDI\_Health Worker).*

## **The perceived causes of pregnancy-related illness**

Study participants revealed several possible causes of the illness during pregnancy. Regarding the causes, the majority mentioned mosquito bites as a known cause of malaria and was said to be a result of non-use of treated bed nets.

*“Malaria is caused by mosquito, I said so because if you don't sleep under the bed net you are more likely to experience mosquito bite and you may get Malaria” (Mbarali\_MadibiraMahango\_IDI\_Mother).*

*“Malaria is caused by mosquitos and the water bodies existing around our environment are the breeding sites of mosquitoes” (BusokeloDC\_Kibole\_IDI\_Mother).*

Urinary Tract Infections (U.T.I) were also mentioned frequently as the most common illness that pregnant mothers suffered from. Mothers mentioned poor toilet sanitation and sharing of toilets as the main cause of U.T.I. Others believed the disease was due to dirty surroundings.

*“Often is caused by uncleanness, poor toilets sanitation is the main cause. When you use dirty toilet, you may be infected” (Mbarali\_MadibiraMahango\_IDI\_Mother).*

*“I’m guessing it is toilets. The act of sharing toilets is the main cause of U.T.I. Toilets around our homes are better than public toilets” (Wimba\_Mahango\_Mother\_IDI).*

Participants also narrated several causes of STDs (HIV, Gonorrhea, and syphilis). Sharing of sharp instruments, unprotected sex, open wounds and blood transfusion were mentioned as the main causes of sexually transmitted diseases.

*“The main cause is practicing unsafe sex and having an unfaithful partner” (Mbeya DC Simambwe\_IDI\_Mother).*

*“It’s all about doing sex, or sharing of sharp instruments like razor blades or using syringes that have been used by an infected person” (Busokelo Dc\_Luteba\_IDI\_Mother).*

*“HIV infection is widespread in Mbeya; we are the leading in Tanzania. Being in close contact with an infected person, having an open sore/wound can cause HIV. Also, blood transfusion especially after a car accident could be another cause” (Kyela Dc\_Kilasilo\_IDI\_Mother).*

Other diseases mentioned were dizziness, headache, stomach ache, swelling of limbs (edema), and anaemia. The majority of mothers thought lack of enough or certain foods could lead to developing the illnesses like dizziness, headache and anaemia. While others thought that those were pregnancy-induced illnesses.

*“I always noticed that when you are at an early stage of pregnancy, the legs start to swell, and headache problems arise. When the pregnancy continues to develop, the headache problem stops but swelling of legs continues” (Mbeya DC\_Ilembo\_IDI\_Mother).*

Others thought strong sun rays, excess water in the body, having twins’ pregnancy and inadequate nutrients intake were the causes of headache and limb swelling.

*“Like headache, it can be due to strong sun rays or it’s just a pregnancy condition. Legs swelling is due to pregnancy condition or others do say it occurs when a mother has twins in their wombs and also the tendency of having excess water in the body. Sometimes is due to inadequate blood” (Kyela DC \_Ndandalo \_IDI\_Mother).*

*“From what I know, the problem is lacking adequate nutrients during pregnancy or taking improper food during pregnancy may cause swelling of legs and anaemia. Also, I think dizziness is caused by a lack of energy in the body. Other women do not feel like eating anything during pregnancy, it may cause low sugar leading to dizziness” (Kyela DC \_Ndandalo \_IDI\_Mother).*

This study did not only interview mothers but also health workers concerning their perception about the cause of diseases during pregnancy. Some of the interviewed health workers associated U.T.I with the use of unhygienic toilets or defecating at the bush and low immunity.

*“What causes U.T.I is poor sanitation. This area has many Sukuma pregnant women who are mostly affected by U.T.I. Sukuma people usually don’t use toilets and even if they have ones, they go around the bush nearby to urinate or defecate. They also throw cattle dung around their living environment and live with their livestock’s”*

*(Mbarali DC Wimba Mahango\_IDI\_Health Worker).*

*“U.T.I is just an infection which occurs in the urinary tract and is caused by sharing dirty toilets”* (Mbarali DC\_Igurusi\_IDI\_Health Worker).

*“In reality, most of the pregnant mothers have U.T.I due to low immunity during pregnancy. We are not saying it is that common but it happens during pregnancy”*

*(Kyela-Ndabo\_IDI\_Health worker).*

Health workers reported malaria to be common during pregnancy in two places i.e. Kyela and Mbarali DC due to hot weather, rice farming, and humidity. The following were the quotes from health workers:

*“During the farming season, the majority of pregnant women build temporary houses and sleep at the farm. Sleeping at the farm where there is a lot of water and grasses exposes pregnant women to malaria infection. Malaria contributes greatly to anaemia although poor diet contributes too”* (Mbarali DC\_Madibira Mahango\_IDI\_Health Worker).

*“In this zone, there is a lot of mosquitoes. However, due to hot weather most of the pregnant women do not use bed nets when sleeping”* (Kyela DC\_Ndandalo\_Health Worker).

*“The main cause of Malaria is that pregnant mothers usually don’t follow the instruction on the proper use of bed nets. When visiting the antenatal clinic, they always receive bed nets but they don’t use them”* (Kyela Dc\_Kilasilo\_Health Worker).

Few health workers mentioned inadequate use of nutrient supplements as the main cause of anemia among pregnant mothers as said:

*“For example, anemia happens when a pregnant woman does not use iron and folic acid supplements. Non-use of IFAS contributes to low haemoglobin. It may also happen due to the low use of vegetables. Low level of blood can result in severe headache among pregnant mothers”* (Mbarali DC Wimba mahango\_IDI\_Health Worker).

*“Sometimes it is fetal high demand which causes anemia and if the pregnant mother doesn’t get adequate food that increase blood”* (Mbeya Dc\_Mageuzi\_Health Worker).

Typhoid was the least mentioned disease by health workers to occur during pregnancy. The use of unsafe water was pointed out as the main cause of typhoid.

*“When it comes to typhoid, unsafe drinking water is the main cause. The majority of community members use water from wells and streams which is contaminated”* (Kyela-Ndabo\_IDI\_Health Worker).

## **The perceived effective treatments of pregnancy-related illnesses**

The majority of the interviewed mothers were unable to point out effective treatments for almost all diseases. They felt that visiting health facilities to receive tablets or injections was an effective treatment but could not name the drugs provided as narrated:

*“When I visited at the health facility, I received certain tablets to treat U.T.I. I know if U.T.I is not treated, there will be effects to the child” (Mbarali\_Igurusi\_IDI\_Mothers).*

*“We received tablets for malaria treatment during pregnancy at the health facility” (Mbeya DC Mageuzi\_IDI\_Mothers).*

*“From what I know, there are tablets provided to HIV-positive mothers to prevent the child from being infected and it also helps to prolong mother’s life” (Busokelo Dc\_Ikama\_IDI\_Mothers).*

Some participant reported not receiving any treatment for illnesses like headache, stomachache, and swollen legs as reported:

*“Aah, we are usually provided with no treatments for headaches, stomach pain, and swollen legs. For myself, I have never received any treatment for those conditions” (Mbeya DC\_Ilembo\_IDI\_Mothers).*

Health workers also provided their views about effective treatment provided to pregnant mothers. However, the majority could not name the exact drug provided except for malaria and anaemia.

*“For U.T.I, when they came here we treat them by providing antibiotics and with enough instruction that they must swallow the tablets with plenty of water to flush-out the microorganisms” (Mbarali DC Wimba Mahango\_IDI\_Health Worker).*

*“About eclampsia, we do treat by using tablets to reduce the effects of high blood pressure and if she is having diabetes and other complications, we do refer them to a larger hospital where there is intensive check-up and care” (Mbeya DC\_Mageuzi\_IDI\_Health Workers).*

Health workers also pointed out that some women escape treatment even when tested positive with syphilis because the injection is known to be too painful as said:

*“For example, syphilis treatment is available here, but some do escape the treatment since penicillin injection pain a lot. The patient requires three injections for three weeks. They only show up for the 1st injection and do not finish 2nd and 3rd dose” (Mbeya DC Ilembo\_IDI\_Health worker).*

For anemia, the majority of health workers provided IFAS supplements as an effective way to treat anaemia.

*“As from our community, I never heard any woman getting adverse health outcomes like death because of low HB. But if a pregnant woman has a blood level lower than normal, she is given IFAS, two tablets per day. For those with very low HB i.e. 8.5mg/lit, we refer them for the advanced hospital to receive appropriate treatment” (Kyela-Ndabo\_IDI\_Health Worker).*



## Benefits of micronutrient supplements

The majority of interviewed participants new that supplements were crucial in increasing blood level during pregnancy and few knew about prevention of birth defects. However, the main MMS mentioned was IFAS and no other forms. Here are the comments regarding the benefits of these MMS:

*“MMS increases blood in the body, helps in fetal development and prevent birth defects”*

*(Kyela DC-Ndandalo\_Participatory Mother).*

*“They told us that the tablets increase blood in the body and if not taken as required, we can deliver a baby with no brain, they frightened us”*

*(Kyela DC-Ndandalo\_IDI\_Participatory Mother).*

*“They are important for pregnant mother, makes pregnant mother strong and with good health which helps us to deliver safely”*

*(Mbarali DC-Madibira Mahango\_IDI\_Participatory Mother).*

*“Those minerals are for safe delivery and prevent complications to the child, like Spinal Bifida, cleft lip palate and anencephaly. Most of the mothers refuse to use the tablets but after being educated on the importance, they start to use the MMS”*

*(Kyela DC-Kilasilo\_IDI\_Health Worker).*

*“MMS directly prevents anemia, but in another way, reduces the chance of congenital mal-formation”* (Mbeya DC Ilemba\_IDI\_Health Worker).

*“For example death which can occur among pregnant mothers is due to low HB or loss of blood during delivery, MMS prevents all these. It also prevents birth defects, other diseases like cleft lip palate, marasmus and spinal Bifida”*

*(Busokelo DC\_Ikama\_IDI\_Health Worker).*

*“As said earlier, proper use of supplement tablets can prevent anencephaly, spinal Bifida and prevent deformities in arms, legs, and mouth (cleft lip palate)”*

*(Busokelo DC\_Luteba\_IDI\_Health Worker).*

*“MMS besides preventing diseases, reduces chances of giving birth through caesarean section because a child with hydrocephalus will demand operation”*

*(Mbeya DC\_Mageuzi\_IDI\_Health Worker).*

## Effects of untreated illnesses

Participants expressed that Illnesses during pregnancy needed to be treated or prevented at an earlier stage to reduce poor health outcomes for both mother and unborn child. Participants mentioned several effects of untreated illnesses including death, miscarriage, cerebral palsy and damage of reproductive organs. The following were the concerns from the study participants:

*“The immediate outcome is miscarriage and if pregnant mother fails to receive timely treatments can results into death because of serious fever”*

*(Kyela DC-Ndandalo\_IDI\_Participatory Mother)*

*“The effects of untreated illnesses during pregnancy can results into miscarriage, cerebral palsy, damage in reproductive organ and poor health status to mothers. If treated earlier then can be safe”* (Mbarali-Madibira Mahango\_IDI\_Mother)

On the other side, health workers mentioned miscarriage, anemia, still birth, death, blindness, cervical cancer and low birth weight as the likely effects that can result due to untreated illnesses as narrated:

*“For example, if a pregnant mother delay to cure malaria can result into delivering a baby with less than 2.5 kg or can results into miscarriage”*

*(Mbarali DC-Wimba mahango\_IDI\_Health worker).*

*“Untreated Malaria can result into low HB in the body. This may result into death of the mother and unborn child. It can also result into miscarriage during early stage of pregnancy or still birth if the pregnancy is above 5 months”*

*(Kyela DC-Kilasilo\_IDI\_Health Worker).*

*“If these STD’s remain untreated can results into cervical cancer as well as damage to the fallopian tubes. These effects are also associated with death to pregnant mother’s prior delivery and if she has low level of HB, can also results into still birth”*

*(Mbarali DC\_Igurusi\_IDI\_Health worker).*

## **The appropriation of MMS intervention modality concerning care-seeking and nutrition seeking behaviors in the study cultural context**

The majority of study participants do practice positive healthcare-seeking behaviour. However, they made less than four ANC visits. During the interviews, several factors limited their seeking behaviour. Those factors were: distance to the health facility, low awareness of the time to start ANC, inadequate knowledge of health professionals and the mothers about the required number of visits, traditions and beliefs that mother can be bewitched if starting ANC early, being an adolescent as they are stigmatization and lack of support from the spouses both financially and failure to escort them to the facility.

Concerning food supplements, the study participants admitted knowing that IFAS reduces anaemia, however, they admitted not using as recommended and the main reason being offal smell and taste. Participants reported eating less than five food groups because of choices during pregnancy, food availability, seasonality, economic power, and knowledge about healthy foods. On the other hand, health workers admitted giving nutrition education in their setting but lacked trained health workers to educate pregnant adolescents.

The over-abundance of health workers makes it easy to implement MMS in Mbeya and probably other places in Tanzania. The main challenge will be adherence if advocacy on early ANC attendance and number of visits is ignored and if the smell and taste of MMS will not improve. There was a request of having a fewer number of tablets to swallow and or producing different forms of MMS.

## **Feeding pattern for lactating women**

During lactation, a mother needs to maintain healthy eating to replace lost nutrients during pregnancy and manage breastfeeding. Adequate food during lactation is also important for the child’s development. Poor food intake during lactation may cause lactation failure and maternal malnutrition. Interviewed participants mentioned that foods consumed by lactating mothers need to be soft foods. None of the interviewed mothers mentioned about supplements during lactation. Several quotes reflect their thoughts:

*“She needs to eat meat and bananas stew, porridge and other soft foods. Solid foods are hardly digested, and they inhibit production of breastmilk”*

*(Kyela DC-Kilasilo\_IDI\_Participatory Mother).*

*“She needs to drink milk so that the baby can suck that milk to be strong and healthy. She also need to drink tea” (Busokelo DC-Luteba\_IDI\_Participatory Mother).*

*“They should limit drinking fresh cow milk if breast milk flows in excess. They also need to limit coconut milk” (Busokelo DC-Ikama\_IDI\_Participatory Mother).*

*“Since the body need food to regain back, all five food groups are necessary. When I gave birth through caesarean section, they told me to eat certain soft foods. However, I did not each because of poor economic status” (Kyela DC-Ndandalo\_IDI\_Participatory Mother).*

*“Eating soup in the morning, heavy meal like Ugali with meat plus fruits and vegetables in the afternoon is necessary for production of breastmilk” (Mbeya DC-Simambwe\_IDI\_Participatory Mother).*

*“You must not eat only one kind of food for example for my family we have schedule; in the morning I can drink porridge with milk or soup, in afternoon stiff porridge with vegetables and fruits and during night, I can eat rice, meat and fruits, that’s all. Diversified foods help the baby to get enough milk as they are not supposed to eat anything until 5 months and 29 days” (Mbarali DC-Igurusi\_IDI\_Participatory Mother).*

## Food prescriptions/taboo during pregnancy

Several myths regarding foods eaten during pregnancy were reported including increased babies’ weight which might results in cesarean section during delivery as a result of eating eggs during pregnancy or having a baby with a bald head. Drinking milk was associated with babies being born with dirty fluids and eating liver was said to cause tongue problems (the child tongue will stick to the lower part of the mouth). Eating pork and goat meat was associated with babies born with sores and patches.

**Table 14** Diseases that are symptoms of anaemia during pregnancy

Name and description of food/drink	The cultural explanation for why it should be consumed during pregnancy
Eggs	<ul style="list-style-type: none"> <li>Increases babies’ weight which might results in cesarean section during delivery</li> <li>Babies born with no hair</li> </ul>
Milk	<ul style="list-style-type: none"> <li>Not allowed during the last month of pregnancy as it causes babies to be born with dirty fluids</li> <li>Baby covered with milk soon after delivery</li> </ul>
Liver	It causes the baby to be born with a tongue problem, the tongue sticking to the lower part
Fish	<ul style="list-style-type: none"> <li>Babies born with sores</li> <li>Babies born with no hairs</li> </ul>
Beans	Increase gas in stomach and causes heartburn among pregnant women
Groundnuts	Babies covered with dirty white slippery fluid during delivery
Mushrooms	It becomes difficult to separate babies’ umbilical cord from her mother
Pork and Goat meat	Babies born with sores and patches
Mo-energy drink, soda, malta-a non-alcoholic drink	<ul style="list-style-type: none"> <li>Cause miscarriage</li> <li>Mother becomes weak i.e. physical unwellness</li> <li>Causes nausea and increase blood pressure</li> </ul>

Cold drinks	Babies born with chest problems
Tea & Cassava leaves	Might cause miscarriage if taken in large quantity
Pineapple	It irritates babies' skin, causes patches on the skin after delivery.
Alcohol	<ul style="list-style-type: none"> <li>• Can cause miscarriage</li> <li>• Affect mother's health status</li> <li>• Causes mothers headache</li> <li>• Mothers cannot push the baby during delivery</li> <li>• Increase mothers blood pressure</li> </ul>
Yogurts	Babies born with white color on their forehead
Pepper	<ul style="list-style-type: none"> <li>• Babies born with very red eyes that are swollen &amp; eyes problems</li> <li>• Might be blind later in life</li> <li>• Dirty discharge from eye soon after birth</li> </ul>
Lemons	<ul style="list-style-type: none"> <li>• Reduce mothers Hemoglobin level (Blood)</li> <li>• Babies born with sores</li> </ul>
Pawpaw	Babies born with rashes on the face
lady's fingers (Okra)	<ul style="list-style-type: none"> <li>• Causes miscarriage</li> <li>• Babies feel like vomiting after birth</li> </ul>
Sugar cane	<ul style="list-style-type: none"> <li>• Causes dropsy (a severe accumulation of fluid, often in the legs and feet) and sometimes can cause miscarriage if taken in large quantity</li> <li>• Causes patches on the babies' skin</li> </ul>

## Conclusion

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This ethnomedical study showed that women had limited understanding of several gains related to the use of IFAS. The low use of IFAS and other MMS was related to smell, taste and colour. For the new MMS to be used in Mbeya, several appealing names, slogan and logo were proposed. Market assessment demonstrated availability of 20 different MMS products in the pharmacies in the Mbeya region. The findings in phase two revealed inadequate knowledge and perception regarding disease facing pregnant women, foods eaten and demonstrated several negative norms underlying foods and diseases during pregnancy. Study participants failed to link diseases with the causes and required treatment.

## Recommendations:

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1. IMAN SBSS strategy/materials need to address gap in knowledge about IFAS/MMS, myths, misconception and misinformation about food, food groups and diseases.
2. At the health facility and communities, extensive education and awareness creation should be done for pregnant mothers and community members to improve their knowledge about the importance of IFAS/MMS, foods groups and diseases associated with pregnancy.
3. At the health facility, education should be done routinely i.e. every Antenatal Care attendance and to the community using community health workers to ensure all pregnant women are reached since continuous exposure to education is likely to increase understanding.
4. There is a need to use different channels to reach pregnant adolescents including health facility, close family members, schools and community health workers.
5. The production of new MMS or IFAS should consider improving taste, smell and colour. Also, promotion should consider provided names, slogan, logos, and proposed channels. If MMS is to be sold, the price should be reasonable.



## 6.0 Acknowledgements

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## Appendix A: Focus Group Discussion

### DEMOGRAPHIC INFORMATION:

**Data Collector Name:** \_\_\_\_\_ **Date:** \_\_\_\_\_

**Location:** \_\_\_\_\_ **Number of Participants:** \_\_\_\_\_

#### Introduction:

Thank you for taking the time to speak with us today. We would like to hear your thoughts on micronutrient supplements and supplementation during pregnancy.

1. To start, can everyone tell us a little about their family?

#### Antenatal Care:

2. We have heard that X are common challenges that women face during pregnancy. Can you tell us about your experience with this?
  - Probe on challenges related to nutrition
  - Probe on social support

#### MMS Products:

3. Now let's discuss your experience with supplements during pregnancy. We have heard that many pregnant women in this community use X. Can you tell me why that is?
  - Probe on what makes these products desirable
  - Probe on products disliked by the community and reasons why
  - Probe on how these products are used
  - Probe on how easy or difficult it is to use the supplements
4. Can you describe any barriers in getting or using these supplements?
  - Probe on availability
  - Probe on affordability
  - Probe on where supplements are sold
5. We have heard that supplements can cause X. Can you please explain why that is?

#### MMS Promotion:

Now we would like to hear your thoughts on how these products should be promoted in this community.

6. Can you describe what a product should look like to make it attractive to pregnant women?
  - Probe on colors
  - Probe on logo
  - Probe on names
  - Probe on colors, names and logos that should not be used
7. Can you tell us where this product should be promoted?

- Probe on where pregnant women often get health advice
  - Probe on health advertisements in the community
- 8.** Can you tell us who this product should be marketed to?
- Probe on advertising to fathers
  - Probe on differences in messaging depending on audience

## Appendix B: Participatory Workshop - Branding

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### DEMOGRAPHIC INFORMATION:

**Data Collector Name:** \_\_\_\_\_ **Date:** \_\_\_\_\_

**Location:** \_\_\_\_\_ **Number of Participants:** \_\_\_\_\_

#### Introduction:

We would like to hear your suggestions on developing a brand for a micronutrient supplement specifically for pregnant women. Please express your ideas freely; there are no right or wrong answers. We will be asking you a series of questions and will vote on your responses.

**Question 1:** To start we would like you to tell us what challenges regarding nutrition that pregnant women in this community face. Let's vote on the foremost challenges.

- You will have 5 votes to use. You can use all your votes on one challenge or split them up.

**Branding:** Discuss common brands in the community focusing on colors, names, logos and slogans. Use brands like sports teams as examples.

**Question 2:** Now, we would like to discuss how a micronutrient supplement should look to make it attractive to pregnant women in this community. We will be asking for your ideas for the color, name, logo and slogan for this product. Let's start with color. Please brainstorm a color scheme that you think would suit a product like this.

- Let's vote on the color schemes. You have 5 votes and can use all 5 on one idea or split them up.

**Question 3:** Next, we would like you to think about a good name for a product like this. The name can be one, two or three words.

- Let's vote on the names. You have 5 votes and can use all 5 on one idea or split them up.

**Question 4:** Now, let's think about a good slogan to represent this product. The slogan could be a short phrase that is memorable.

- Let's vote on the slogans. You have 5 votes and can use all 5 on one idea or split them up.

**Question 5:** Now, let's discuss what a good logo would look like. The logo could be a simple picture that represents the name and the slogan of the product.

- Let's vote on the logo ideas. You have 5 votes and can use all 5 on one idea or split them up.

Thank you for your participation. Does anyone have any additional questions or comments?



## Appendix C: Market Survey

### DEMOGRAPHIC INFORMATION:

Data Collector Name: \_\_\_\_\_

Date: \_\_\_\_\_

Location: \_\_\_\_\_

#### Market Observation Checklist:

Fill in the supplements that are seen in this community while observing markets and pharmacies. Please fill out a new section for each supplement that is seen.

##### Section 1: Hemovit

1. What unit of this supplement is being sold? Ex: bottle with x tablets, blister pack with x tablets, single tablets

Number being sold \_\_\_\_\_

Unit \_\_\_\_\_

2. How much is this supplement being sold for?

\_\_\_\_\_ (list price of unit in local currency)

3. How many units of X does the store owner report selling in the past week?

\_\_\_\_\_ number of units sold in the past week

Location type:

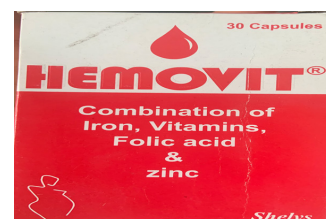
- ☐ market stand ☐ small store  
☐ household ☐ pharmacy  
☐ other: \_\_\_\_\_

4. Who does the store owner most frequently see purchasing this supplement?

☐ woman ☐ male ☐ other:

5. How is this supplement displayed in the store?

- ☐ n/a ☐ behind counter  
☐ displayed in front of other products  
☐ other: \_\_\_\_\_



##### Section 2: Pregnacare Plus

1. What unit of this supplement is being sold? Ex: bottle with x tablets, blister pack with x tablets, single tablets

Number being sold \_\_\_\_\_

Unit \_\_\_\_\_

2. How much is this supplement being sold for?

\_\_\_\_\_ (list price of unit in local currency)

Please pick a primary selling location:

3. How many units of X does the store owner report selling in the past week?

\_\_\_\_\_ number of units sold in the past week

Location type:

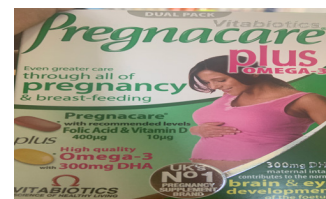
- ☐ market stand ☐ small store  
☐ household ☐ pharmacy  
☐ other: \_\_\_\_\_

4. Who does the store owner most frequently see purchasing this supplement?

☐ woman ☐ male ☐ other:

5. How is this supplement displayed in the store?

- ☐ n/a ☐ behind counter  
☐ displayed in front of other products  
☐ other: \_\_\_\_\_



### Section 3: Mega Prenatal

1. What unit of this supplement is being sold? Ex: bottle with x tablets, blister pack with x tablets, single tablets

Number being sold \_\_\_\_\_  
Unit \_\_\_\_\_

2. How much is this supplement being sold for?

\_\_\_\_\_ (list price of unit in local currency)

Please pick a primary selling location:

3. How many units of X does the store owner report selling in the past week?

\_\_\_\_\_ number of units sold in the past week

Location type:

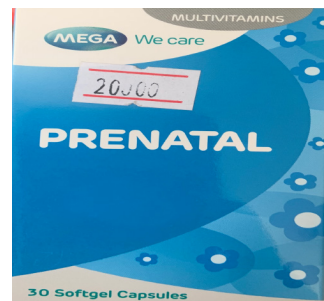
- ☐ market stand ☐ small store  
☐ household ☐ pharmacy  
☐ other: \_\_\_\_\_

4. Who does the store owner most frequently see purchasing this supplement?

☐ woman ☐ male ☐ other:

5. How is this supplement displayed in the store?

- ☐ n/a ☐ behind counter  
☐ displayed in front of other products  
☐ other: \_\_\_\_\_



### Section 4: 21<sup>st</sup> Century

1. What unit of this supplement is being sold? Ex: bottle with x tablets, blister pack with x tablets, single tablets

Number being sold \_\_\_\_\_  
Unit \_\_\_\_\_

2. How much is this supplement being sold for?

\_\_\_\_\_ (list price of unit in local currency)

Please pick a primary selling location:

3. How many units of X does the store owner report selling in the past week?

\_\_\_\_\_ number of units sold in the past week

Location type:

- ☐ market stand ☐ small store  
☐ household ☐ pharmacy  
☐ other: \_\_\_\_\_

4. Who does the store owner most frequently see purchasing this supplement?

☐ woman ☐ male ☐ other:

5. How is this supplement displayed in the store?

- ☐ n/a ☐ behind counter  
☐ displayed in front of other products  
☐ other: \_\_\_\_\_



**Section 5:**

1. What unit of this supplement is being sold? Ex: bottle with x tablets, blister pack with x tablets, single tablets

Number being sold \_\_\_\_\_

Unit \_\_\_\_\_

2. How much is this supplement being sold for?

\_\_\_\_\_ (list price of unit in local currency)

Please pick a primary selling location:

3. How many units of X does the store owner report selling in the past week?

\_\_\_\_\_ number of units sold in the past week

Location type:

☐ market stand

☐ small store

☐ household

☐ pharmacy

☐ other: \_\_\_\_\_

4. Who does the store owner most frequently see purchasing this supplement?

☐ woman ☐ male ☐ other:

5. How is this supplement displayed in the store?

☐ n/a ☐ behind counter

☐ displayed in front of other products

☐ other: \_\_\_\_\_

**Section 6:**

1. What unit of this supplement is being sold? Ex: bottle with x tablets, blister pack with x tablets, single tablets

Number being sold \_\_\_\_\_

Unit \_\_\_\_\_

2. How much is this supplement being sold for?

\_\_\_\_\_ (list price of unit in local currency)

Please pick a primary selling location:

3. How many units of X does the store owner report selling in the past week?

\_\_\_\_\_ number of units sold in the past week

Location type:

☐ market stand

☐ small store

☐ household

☐ pharmacy

☐ other: \_\_\_\_\_

4. Who does the store owner most frequently see purchasing this supplement?

☐ woman ☐ male ☐ other:

5. How is this supplement displayed in the store?

☐ n/a ☐ behind counter

☐ displayed in front of other products

☐ other: \_\_\_\_\_

**Section 7:**

1. What unit of this supplement is being sold? Ex: bottle with x tablets, blister pack with x tablets, single tablets

Number being sold \_\_\_\_\_

Unit \_\_\_\_\_

2. How much is this supplement being sold for?

\_\_\_\_\_ (list price of unit in local currency)

Please pick a primary selling location:

3. How many units of X does the store owner report selling in the past week?

\_\_\_\_\_ number of units sold in the past week

Location type:

☐ market stand

☐ small store

☐ household

☐ pharmacy

☐ other: \_\_\_\_\_

4. Who does the store owner most frequently see purchasing this supplement?

☐ woman ☐ male ☐ other:

5. How is this supplement displayed in the store?

☐ n/a ☐ behind counter

☐ displayed in front of other products

☐ other: \_\_\_\_\_

**Section 8:**

1. What unit of this supplement is being sold? Ex: bottle with x tablets, blister pack with x tablets, single tablets

Number being sold \_\_\_\_\_

Unit \_\_\_\_\_

2. How much is this supplement being sold for?

\_\_\_\_\_ (list price of unit in local currency)

Please pick a primary selling location:

3. How many units of X does the store owner report selling in the past week?

\_\_\_\_\_ number of units sold in the past week

Location type:

☐ market stand

☐ small store

☐ household

☐ pharmacy

☐ other: \_\_\_\_\_

4. Who does the store owner most frequently see purchasing this supplement?

☐ woman ☐ male ☐ other:

5. How is this supplement displayed in the store?

☐ n/a ☐ behind counter

☐ displayed in front of other products

☐ other: \_\_\_\_\_

Please share any additional observations collected during this observation:

Appendix D: Free Listing

DEMOGRAPHIC INFORMATION:

Data Collector Name: \_\_\_\_\_

Date: \_\_\_\_\_ Location: \_\_\_\_\_

No.	Free List Question	Comments to guide field notes
	List all of the different foods you consume in this community.	<ul style="list-style-type: none"><li>• Probe on the top 5 foods mentioned to determine well as a description of that food in general.</li><li>• You might probe about their availability by season. Probe on any foods that seem confusing, new, or unclear to you for further clarification.</li></ul>
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		
9.		
10.		
11.		
12.		
13.		
14.		
15.		
16.		
17.		
18.		
19.		
20.		

No.	Free List Question	Comments
	<b>List for me all of the illnesses that you suffer from as a pregnant woman in this community.</b>	<ul style="list-style-type: none"> <li>• After listing, probe on the top 5 illnesses to get local explanations.</li> <li>• Probe on any nutrition-related illnesses (e.g., anemia). Probe on any illnesses that seem confusing, new, or contradictory to you.</li> </ul>
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		
9.		
10.		
11.		
12.		
13.		
14.		
15.		
16.		
17.		
18.		
19.		
20.		



# Appendix E: Pile Sorting

## DEMOGRAPHIC INFORMATION:

Data Collector Name: \_\_\_\_\_

Date: \_\_\_\_\_ Location: \_\_\_\_\_

Respondants characteristics:

Age: \_\_\_\_\_ Number of Children: \_\_\_\_\_

### Introduction

**Question 1 Maternal Illness:** In order to help me understand more about illnesses pregnant women experience in this community, I'd like to ask you to tell me which illnesses go with each other. I've made a list of some illnesses that are commonly experienced here. Please sort these illnesses into piles, in whatever way you think is best, in as many piles as you wish. There is no right or wrong way. (Rules: respondents may not put all illnesses into one pile or separate them into each into its own pile.)

Pile	Card Number
1	
Explanation for Pile 1:	
2	
Explanation for Pile 2:	
3	
Explanation for Pile 3:	
4	
Explanation for Pile 4:	
5	
Explanation for Pile 5:	
6	
Explanation for Pile 6:	

**Pile Sort Question 2 (Illness Severity).** Now I want you to re-sort these cards. In order to help me understand more about illness in this community, I'd like to ask you to put these illnesses into 3 piles based on how severe they are: 1) most severe, 2) moderately severe, 3) less severe. There is no right or wrong way; it is just your perception.

Pile	Card Number
1	
Explanation for Pile 1:	
2	
Explanation for Pile 2:	
3	
Explanation for Pile 3:	

**Pile Sort Question 3 (Pregnant Women Foods).** In order to help me understand more about food in this community, I'd like to ask you to tell me which foods go with each other. I've made a list of some foods that are commonly eaten here among pregnant women. Here they are. Please sort these foods into piles, in whatever way you think is best, in as many piles as you wish. There is no right or wrong way to do this.

Pile	Card Number
1	
Explanation for Pile 1:	
2	
Explanation for Pile 2:	
3	
Explanation for Pile 3:	
4	
Explanation for Pile 4:	
5	
Explanation for Pile 5:	
6	
Explanation for Pile 6:	

Potential follow-up questions for explanations of each pile

- Tell me about pile X, Y, Z, etc. and how these cards are similar
- I notice that these cards are in different piles. Could you explain that for me?
- If you could name each of these piles, how would you do so?

## Appendix F: Pregnant Women In-Depth Interview

---

### DEMOGRAPHIC INFORMATION:

**Data Collector Name:** \_\_\_\_\_

**Date:** \_\_\_\_\_

**Location:** \_\_\_\_\_

#### Introduction:

1. Thank you for taking the time to speak with me. To start, can you please tell me about your family?
2. Could you please tell me about a typical day for you?
3. Now can you tell me about the resources available for pregnant women in this community?

#### Antenatal Care:

Now I would like to know more about health during pregnancy in this community.

4. Can you please describe what a healthy pregnancy should look like?
5. Can you please describe any changes to your diet after you became pregnant?
  - Probe on any advice regarding diet during pregnancy received
  - Probe on who gave her the advice
  - Probe on foods that are good for pregnant women
  - Probe on foods that pregnant women should avoid
  - Probe on how easy or difficult it is to maintain a healthy diet during pregnancy
6. Can you please describe the illnesses that pregnant women in this community suffer from?
  - Probe on seriousness of illnesses
  - Probe on diseases she is most concerned about
  - Probe on consequences of untreated illness
  - Probe on the cause of each illness
  - Probe on prevention of each illness
  - Probe on treatment
7. Can you describe any health care you have received from the time you knew you were pregnant to now?
  - Probe on healthcare seeking practices
  - Probe on knowledge of when to seek care
8. What barriers do women in this community face in staying healthy during pregnancy?
  - Probe on community support
  - Probe on family support
  - Probe on access to care

#### Micronutrient Supplement

This is great information. Now I would like to hear your thoughts on micronutrient supplements.

9. Can you describe how a micronutrient supplement could help you stay healthy during your pregnancy?
  - Probe on illness prevention

- 10.** Can you describe any similar products that you or other pregnant women in your community use?
- Probe on source of supplements
  - Probe on availability
  - Probe on affordability
  - Probe on sharing
  - Probe on what makes them desirable
  - Probe on products that are not desirable
  - Probe on perception of product
  - Probe on other medications used during pregnancy
- 11.** Can you describe how these products were explained to you?
- Probe on who told her about these products
  - Probe on how effective this explanation was
  - Probe on how it could be improved
- 12.** Can you please tell me how to best market a micronutrient supplement to pregnant women in this community?
- Probe on ways to promote the product
  - Probe on effective distribution channels
- 13.** Thank you for your time. Is there anything else you would like to discuss that was not brought up?

## Appendix G: Health Worker In-Depth Interview

---

### DEMOGRAPHIC:

**Data Collector Name:** \_\_\_\_\_

**Date:** \_\_\_\_\_

**Location:** \_\_\_\_\_

### Introduction:

1. Could you please tell me about your role in the community?
2. Tell me about a typical day as a health worker?
3. Can you please describe what health care resources there are for pregnant women in this community?

### Antenatal Care:

Now I would like to know more about health during pregnancy in this community.

4. Can you please describe what a healthy pregnancy should look like?
5. Can you please describe the illnesses that pregnant women in this community suffer from?
  - a. Probe on seriousness of illnesses
  - b. Probe on consequences of untreated illness
  - c. Probe on the cause of each illness
  - d. Probe on prevention of each illness
  - e. Probe on treatment
6. Can you tell me about illnesses that you are most concerned with?
  - a. Probe on specific stories/ narratives
7. Tell me about the care that a pregnant woman receives over the course of her pregnancy
  - a. Probe on any nutritional advice given to pregnant women
  - b. Probe on if advice is followed
  - c. Probe on reasons why women may or may not follow advice
  - d. Probe on healthcare seeking practices
8. What barriers do women in this community face in staying healthy during pregnancy?
  - a. Probe on community/family support
  - b. Probe on access to care

### Micronutrient Supplement

This is great information. Now I would like to hear your suggestions about developing a program that will introduce a micronutrient food supplement

9. Can you describe the benefits to micronutrient supplement for a woman during her pregnancy?
  - a. Probe on challenges to access micronutrient supplement benefits
  - b. Probe on illness prevention



- 10.** Can you describe similar products that pregnant women in this community use?
- a.** Probe on source of medications/ supplements
  - b.** Probe on affordability
  - c.** Probe on sharing
  - d.** Probe on what makes them desirable
  - e.** Probe on products that are not desirable
  - f.** Probe on acceptability of micronutrient supplement
- 11.** Please describe the most effective way to market a micronutrient supplement in this community?
- g.** Probe on trusted communication channels
  - h.** Probe on different ways to share information of micronutrient supplements (distribution channels)
  - i.** Probe on how to explain the micronutrient supplement to women
  - j.** Probe on best ways to ensure that the product is being used correctly

Thank you for your time. Is there anything else you would like to discuss that was not brought up?

## APPENDIX H: MAJADILIANO YA VIKUNDI NA KINAMAMA NA VIJANA WAJAWAZITO NA WENYE WATOTO

### TAARIFA ZA KIDEMIGRAFIA

Jina la mkusanya taarifa: \_\_\_\_\_ Tarehe: \_\_\_\_\_

Wilaya: \_\_\_\_\_ Kijiji: \_\_\_\_\_

Idadi ya washiriki: \_\_\_\_\_

Jina la kikundi: \_\_\_\_\_

### Utangulizi:

Asante kwa kutenga muda wa kuzungumza nazi siku ya leo. Tutapenda kujua maoni yako juu ya virutubishi vya nyongeza na utumiaji wa virutubishi vya nyongeza

1. Kwa kuanza, naomba kila mtu anieleze kidogo kuhusu familia yake (anaweza kueleza chochote kuhusu familia, watoto na jambo la tofauti au la kumfurahisha)

### Huduma wakati wa ujauzito

2. (a) Je ni vikwazo/changamoto gani wanawake wajawazito wanapata wakati wa ujauzito?  
(b) Je unaweza kunielezea uzoefu wako ikiwa kuna changamoto ulipata wakati wa ujauzito?
  - Dodosa changamoto/matatizo ya lishe
  - Dodosa juu ya misaada wanayopata katika kutatua changamoto hizo
3. Virutubishi mchanganyiko vyenye madini na vitamini (MMS)  
Sasa ningependa tuzungumzie uzoefu wenu kuhusu virutubishi mchanganyiko (dawa za kuongeza damu) wakati wa ujauzito. Tumesikia kuwa wanawake wajawazito kwenye jamii yenu hutumia virutubishi vya nyongeza kama madini ya chuma na vitamin ya folic acid. Unafikiri ni kwa nini?
  - Dodosa ni kitu gani kinaifanya dawa/virutubishi hivyo vikubalike
  - Dodosa ni kitu gani kinafanya dawa/virutubishi hivyo visikubalike
  - Dodosa ni namna gani hizi dawa/virutubishi zinatumika
  - Dododa kuhusu ugumu/changamoto za kuzitumia
  - Dodosa kuhusu urahisi wa kuzitumia
  - Dodosa faida ya dawa/virutubishi hivyo wakati wa ujauzito
4. Je mnaweza kunieleza ni vizuizi/changamoto gani za upatikanaji na utumiaji ya dawa/virutubishi hivyo? Probe on specific stories/ narratives
  - Dodosa kuhusu upatikanaji wa dawa au virutubishi hivyo
  - Je ikiwa hazipatikani, ni njia gani mbadala hutumika?
  - Dodosa kuhusu uwezo wa kununua
  - Dodosa kuhusu ni wapi virutubishi hivi vinauzwa
  - Dodosa kuhusu ladha ya dawa/virutubishi hivyo (ikiwa wanaipenda au hawaipendi)
  - Dodosa kuhusu rangi ya virutubishi/dawa hizo ikiwa wanaipenda au hawaipendi
  - Dodosa kuhusu utumiaji (idadi ya vidonge, muda wa kumeza na ukubwa wa kidonge)

5. a) Mnaweza kunieleza ni jinsi gani hivyo virutubishi vya nyongeza vinakusaidia wakati wa ujauzito?  
b) Mnaweza eleza ni kwa nini vinasaidia?

### **Uhamasishaji wa matumizi ya virutubishi mchanganyiko**

Sasa nitakwenda kuwauliza ni namna gani uhamasishaji wa matumizi ya virutubishi mchanganyiko ufanyike katika jamii yenu.

6. Je mnawezaa kunieleza virutubishi mchanganyiko vionekane vipi ili kuvifanya vivutie kutumia?
- Dodosa kuhusu nembo, na aina ya nembo wanayoipenda
  - Dodosa kuhusu jina na jina wanalopenda litumike zaidi
  - Dodosa kuhusu rangi na ni rangi gani wanayopenda itumike zaidi
  - Dodosa kuhusu kifungashio na aina ya kifungashio gani wanachopenda kitumike zaidi
7. Je unaweza kunieleza ni njia gani za uhamasishaji wa virutubishi vya nyongeza ufanyike?
- Dodosa, ni wapi mara nyingi wajawazito hupata ushauri/ taarifa za afya
  - Dodosa kuhusu njia gani za uhamasishaji/kutangaza taarifa za afya katika jamii yenu
8. Je unaweza kunieleza uhamasishaji wa matumizi ya virutubishi umlenge nani?
- Dodosa kuhusu uhamasishaji kwa kinababa
  - Dodosa kuhusu ujumbe gani utolewe kwa akinamama
  - Dodosa kuhusu ujumbe gani utolewe kwa akinababa
  - Dodosa kuhusu ujumbe gani utolewe kwa vijana balehe
9. Sasa tujadiliane kuhusu vifungashio vilivyopendekezwa na watu mbalimbali
- Ni kifungashio gani mnakipenda?
  - Sababu za kukipenda kifungashio hicho?
  - Nini cha kuboresha katika kifungashio ulichochagua?
  - Ni kifungashio gani kikundi kimechagua kuwa bora baada ya kupiga kura?

## APPENDIX I: SEMINA YA WASHIRIKI – UTENGENEZAJI WA CHAPA YA VIRUTUBISHI MCHANGANYIKO (MMS).

### MAJADILIANO NA KINAMAMA, VIJANA, WABABA NA WAZEE

Jina la mkusanya taarifa: \_\_\_\_\_ Tarehe: \_\_\_\_\_

Wilaya: \_\_\_\_\_ Kijiji: \_\_\_\_\_

Idadi ya washiriki: \_\_\_\_\_

Jina la kikundi: \_\_\_\_\_

**Utangulizi:** Tungependa kusikia mapendekezo yenu juu ya utengenezaji wa chapa ya virutubishi mchanganyiko hususani kwa wanawake wajawazito. Tafadhali toeni mawazo yenu kwa uhuru, hakuna jibu sahihi au lisilo sahihi. Tutaaliza maswali kadhaa na tutapiga kura kwa majibu yaliyotolewa.

**Utengenezaji wa chapa:** Tutajadili kuhusu chapa zilizo katika jamii kwa kuzingatia rangi, jina, nembo na kauli mbiu. Tumia chapa kama za timu ya mpira kama mfano.

**Swali 1:** Sasa, ningependa tujadili ni namna gani virutubishi vya nyongeza inabidi vionekane ili viwe vya kuvutia kwa wanawake wajawazito na jamii. Tutaaliza juu ya mawazo/maoni yako kuhusu rangi, jina, nembo, na kauli mbiu itakayo faa kwa bidhaa kama hii.

**Sasa tuanze na rangi. Tafadhali changanua/pambanua kuhusu mpangilio wa rangi itakayofaa kwa bidhaa kama hiyo.**

- Sasa tupige kura kuchagua rangi. Una nafasi za kura 5, unaweza kutumia zote tano kwa wazo/chaguo moja au unaweza kuzigawa.

**Swali la 2: Sasa tufikiri kuhusu jina zuri la bidhaa kama hiyo. Jina linaweza kuwa na neno moja, mawili au matatu.**

- Tupige kura kuchagua jina. Una nafasi za kura 5, unaweza kutumia zote tano kwa jina moja au unaweza kuzigawa.

**Swali la 3: Sasa tufikiri juu ya kauli mbiu ya kuwakilisha bidhaa yetu. Kauli mbiu inaweza kuwa neno fupi ambalo litakumbukwa.**

- Tupige kura kuchagua kauli mbiu ya kuwakilisha bidhaa yetu. Una nafasi za kura 5, unaweza kutumia zote tano kwa kauli mbiu moja au unaweza kuzigawa.

**Swali la 4: Sasa ningependa tujadili kuhusu nembo nzuri jinsi itakavyoonekana. Nembo ni picha itakayotambulisha jina na kauli mbiu ya bidhaa yetu.**

- Tupige kura kuchagua Nembo. Una nafasi za kura 5, unaweza kutumia zote tano kwa kuchagua nembo moja au unaweza kuzigawa.

**Swali la 5: Sasa tujadiliane kuhusu vifungashio vilivyopendekezwa na watu mbalimbali**

- Ni kifungashio gani unakipenda?
- Sababu za kukipenda kifungashio hicho?
- Nini cha kuboresha katika kifungashio ulichochagua?
- Ni kifungashio gani kikundi kimechagua kuwa bora baada ya kupiga kura?

Asante kwa ushiriki wako. Je kuna yoyote mwenye swali la nyongeza?

## APPENDIX J: KUORODHESHA VYAKULA NA MAGONJWA

### TAARIFA ZA KIDEMOGRAFIA

Tarehe: \_\_\_\_\_ Wilaya: \_\_\_\_\_ Kijiji: \_\_\_\_\_

Jina la mkusanya taarifa: \_\_\_\_\_

Jina la mhojiwa: \_\_\_\_\_

Umri wa mhojiwa: \_\_\_\_\_ Idadi ya watoto: \_\_\_\_\_ Elimu yake: \_\_\_\_\_

Hali yake ya ndoa: \_\_\_\_\_ Kazi yake: \_\_\_\_\_

No.	Swali la kutaja kwa uwazi	Vidokezo kwa ajili muongozo wa taarifa za kunukuu
1	Orodhesha majina ya vyakula tofauti tofauti vinavyoliwa na wanawake wajawazito katika jamii yenu.	Dodosa kuhusu upatikanaji wake kwa msimu kwa kila chakula nk. Dodosa kwa chakula chochote kisichoeleweka chenye utata, kipya au vizuri kwa ufafanuzi zaidi
i.		
ii.		
iii.		
iv.		
v.		
vi.		
vii.		
viii.		
ix.		
x.		
xi.		
xii.		
xiii.		
xiv.		
xv.		
xvi.		
xvii.		
xviii.		
xix.		
xx.		

<b>2a</b>	<b>Dodosa vyakula vitano vikuu kati ya hivyo hapo juu ambavyo vinaliwa na kinamama wajawazito katika jamii hii. Andika majina yake hapa chini</b>	
i.		
ii.		
iii.		
iv.		
v.		
<b>2b</b>	<b>Nitajie majina ya vyakula ambayo mwanamke mjamzito hapaswi kuvitumia katika jamii yenu</b>	<b>Kwa kila jina la chakula elezea sababu zinazofanya chakula hicho kisitumiwe na mwanamke mjamzito</b>
i.		
ii.		
iii.		
iv.		
v.		
<b>3</b>	<b>Nisaidie kuorodhesha magonjwa yote yan-ayowasumbua wanawake wajawazito katika jamii hii.</b>	<b>Dodosa kuhusu ugonjwa wenye utata/una-okuchanganya au mpya kwako</b>
i.		
ii.		
iii.		
iv.		
v.		
vi.		
vii.		
viii.		
ix.		
x.		
xi.		
xii.		
xiii.		
xiv.		
xv.		
xvi.		
xvii.		
xviii.		
xix.		
xx.		



<b>4</b>	<b>Taja magonjwa yanayohusiana na lishe yanayowapata akinamama wajawazito (mfano; upungufu wa damu)</b>	
i.		
ii.		
iii.		
iv.		
v.		
vi.		
vii.		
viii.		
ix.		
x.		
<b>5</b>	<b>Kutoka katika orodha ya magonjwa yanayowapata akina mama wajawazito, dodosa magonjwa matano makuu na kupata maelezo zaidi.</b>	<b>Kwa kutumia maelezo ya kawaida kabisa, dodosa kwa kila gonjwa, nani anaathiliwa na ugonjwa huo zaidi, muda gani ugonjwa huo hutokea zaidi, namna jamii inavyoweza kuuzuia, namna jamii inavyotibu n.k.</b>
i.		
ii.		
iii.		
iv.		
v.		

## APPENDIX K: Uchambuzi kwa makundi

### TAARIFA ZA KIDEMOGRAFIA

Jina la mkusanya taarifa: \_\_\_\_\_

Tarehe: \_\_\_\_\_ Wilaya: \_\_\_\_\_ Kijiji: \_\_\_\_\_

Jina la mhojiwa: \_\_\_\_\_

Umri wa mhojiwa: \_\_\_\_\_ Idadi ya watoto: \_\_\_\_\_ Elimu yake: \_\_\_\_\_

Hali yake ya ndoa: \_\_\_\_\_ Kazi yake: \_\_\_\_\_

#### Utangulizi

**SWALI LA 1: MAGONJWA YA WANAWAKE KIPINDI CHA UJAUZITO:** Ili kuniwezesha kufahamu zaidi kuhusu magonjwa ambayo yanawapata wanawake wajawazito katika jamii hii, ningependa kukuuliza ni magonjwa gani yanayoendana/Yanafanana. Nimeandaa orodha ya magonjwa ambayo yapo kwa wingi katika jamii yenu. Tafadhali panga magonjwa haya kwenye makundi, kwa kadri unavyohisi ni sahihi, panga makundi mengi uwezavyo. Hakuna mpangilio ulio sahihi au usiho sahihi.

**(Sheria: Mhojiwa hatoweza kuweka magonjwa yote kwenye kundi moja au kutenganisha kwa kuweka kila ugonjwa kwenye kundi lake peke yake)**

Namba ya kundi	Namba ya kadi
1	
Maelezo kwa kundi la 1:	
2	
Maelezo kwa kundi la 2:	
3	
Maelezo kwa kundi la 3:	
4	
Maelezo kwa kundi la 4:	
5	
Maelezo kwa kundi la 5:	
6	
Maelezo kwa kundi la 6:	

**SWALI LA 2: MAGONJWA YA HATARI ZAIDI.** Sasa napenda upange upya kadi hizi ili kuniwezesha kufahamu zaidi kuhusu magonjwa ya akina mama wajawazito katika jamii hii. Naomba upange magonjwa haya katika makundi 3 kulingana na ukali wa magonjwa hayo. 1) Makali/hatari sana 2) Makali/hatari kiasi 3) Makali/hatari kidogo. Hakuna mpangilio uliosahihi na usio sahihi hii, naomba upange kulingana na mtazamo wako.

kundi	Namba ya kadi
1	
Maelezo kwa kundi la 1:	
2	
Maelezo kwa kundi la 2:	
3	
Maelezo kwa kundi la 3:	

**SWALI LA 3: UCHAMBUZI WA MAGONJWA YANAYOHUSIANA NA UPUNGUFU WA DAMU.** Sasa ningependa unichagulie kadi zenye magonjwa yanayohusiana na upungufu wa damu kwa akinamama wajawazito toka katika kadi hizi.

kundi	Namba ya kadi
1	
Maelezo kwa kundi la 1:	

**SWALI LA 4: UCHAMBUZI WA MAKUNDI (VYAKULA VINAVYOLIWA NA WANAWAKE WAJAWAZITO).** Ili kuniwezesha kufahamu zaidi kuhusu vyakula vinavyoliwa katika jamii hii, naomba unijulishe ni vyakula gani kati ya hivi vinaendana kwa pamoja. Nimeandaa orodha ya vyakula vinavyoliwa kwa wingi na wamama wajawazito katika jamii yenu. Tafadhali naomba upange vyakula hivi kwa makundi, kwa kadri unavyohisi ni sahihi zaidi, panga makundi mengi kwa kadri uwezavyo. Hakuna mpangilio uliosahihi au usio sahihi.

(Sheria: Mhojiwa hatoweza kupanga majina ya vyakula vyote kwenye kundi moja au kuweka jina la kila chakula kwenye kundi lake peke yake).

Namba ya kundi	Namba ya kadi
1	
Maelezo kwa kundi la 1:	
2	
Maelezo kwa kundi la 2:	
3	
Maelezo kwa kundi la 3:	

4

Maelezo kwa kundi la 4:

5

Maelezo kwa kundi la 5:

6

Maelezo kwa kundi la 6:

#### **Maswali muhimu ya ufuatiliaji kwa maelezo kwa kila kundi**

- Nieleze kuhusu kundi X, Y, Z, n.k. na jinsi gani kadi za kila kundi zinafanana
- Nimegundua kadi hizi zipo katika kundi tofauti. Unaweza kunielezea sababu ya kuziweka kadi hizi katika kundi hili na si lingine?
- Kama utatakiwa kuyapa majina makundi haya, je kila kundi utaliitaje?
- Kama hajabainisha kundi la vyakula vinavyoongeza damu, muombe avichambue vyakula hivyo toka kwenye kadi zako

### Utangulizi:

1. Asante kwa kutumia muda wako kuzungumza na mimi. Kwa kuanzia, unaweza kuniambia chochote kuhusu familia yako?
2. Unaweza kuniambia kuhusu ratiba yako ya kila siku?
3. Unaweza kuniambia kuhusu rasilimali/vifaa/huduma vilivyopo/zilizopo katika jamii hii kwa ajili ya wanawake wajawazito?

### Huduma wakati wa ujauzito

Kwa sasa ningependa kufahamu zaidi kuhusu afya wakati wa ujauzito katika jamii hii

4. Je unaweza kuelezea muonekano wa mama mjamuzito mwenye afya njema unakuaje?
5. Je unaweza kuelezea mabadiliko ya nini unachokula pindi unapokua mjamzito?
  - Dadisi kuhusu ushauri wowote kuhusu ulaji wakati wa ujauzito
  - Dadisi nani alimpa ushauri huo
  - Dadisi vyakula bora kwa wanawake wajawazito
  - Dadisi vyakula ambavyo wanawake wajawazito wanatakiwa kuviepuka
  - Dadisi wepesi wa kuzingatia ushauri wa ulaji bora wakati wa ujauzito
  - Dadisi ugumu wa kuzingatia ushauri ulaji bora wakati wa ujauzito
  - Dadisi kuhusu vyakula ambavyo jamii inashauri/haishauri mama mjamzito kuvitumia na kwanini?
  - Dadisi kuhusu umuhimu wa kula chakula bora katika kipindi cha ujauzito
  - Dadisi kuhusu vyakula ambavyo mama anapaswa kuvitumia pindi anapokua anayonyesha. Kwanini?
6. Je unaweza kunielezea magonjwa ambayo wanawake wajawazito wanaugua?
  - Dadisi kuhusu ukubwa wa magonjwa hayo
  - Dadisi magonjwa ambayo anayahofia zaidi
  - Dadisi kuhusu madhara ya kutotibu magonjwa hayo
  - Dadisi visababishi vya kila ugonjwa
  - Dadisi udhibiti kwa kila ugonjwa
  - Dadisi kuhusu matibabu
7. Je, unaweza kunielezea huduma za afya ulizopata/wanazopata akimama wajawazito tangu wametambua kuwa ni wajawazito mpaka wanapojifungua?
  - Dadisi utaratibu/njia zinazotumiwa kutafuta huduma za afya kwa wajawazito
  - Dadisi ni namna gani utolewaji wa huduma hizi unapewa kipaumbele
  - Dadisi uelewa kuhusu wakati/muda wa kutafuta huduma, sababu ya kupata huduma hizo
8. Ni vikwazo/changamoto gani wanawake wajawazito wanazipata katika jamii hii zinazoweza kuathiri afya zao wakati wa ujauzito?
  - Dadisi kuhusu msaada wa jamii/familia anaoupata kukabiliana na changamoto/vikwazo hivyo
  - Dadisi kuhusu msaada anaoupata katika kutafuta huduma za afya

## Virutubishi vya nyongeza

Hii ni taarifa nzuri. Sasa ningependa kusikia mawazo yako kuhusu virutubisho vya nyongeza.

9. Je unaweza kuelezea ni jinsi gani virutubishi vya madini chuma na vitamini ya folic acid vinaweza kukusaidia kuwa na afya nzuri kipindi cha ujauzito?
  - Dadisi kuhusu magonjwa yanayoweza kuzuiliwa
  - Dadisi kuhusu chanzo cha madini chuma na vitamini ya folic acid
  - Dadisi upatikanaji wake
  - Dadisi kuhusu gharama zake na kama anaweza kuzinunua
  - Dodosa kuhusu kugawana au kupeana dawa hizo
  - Dodosa kuhusu vitu vinavyoifanya ihitajike/ipendwe
  - Dodosa kuhusu sababu zinazoifanya isipendwi
  - Dodosa kuhusu mtazamo wake juu ya dawa hii
10. Je unaweza kuelezea bidhaa nyingine inayofanana na hii ambayo wewe na watu wengine mnaitumia wakati wa ujauzito?
  - Dadisi chanzo cha virutubishi hivyo vya nyongeza
  - Dadisi upatikanaji wake
  - Dadisi kuhusu gharama zake na kama anaweza kuzinunua
  - Dodosa kuhusu kugawana au kupeana dawa hizo
  - Dodosa kuhusu vitu vinavyoifanya ihitajike/ipendwe
  - Dodosa kuhusu bidhaa ambazo hazipendwi
  - Dodosa kuhusu mtazamo kuhusu bidhaa
  - Dodosa kuhusu dawa nyingine zinazotumika wakati wa ujauzito
11. Je unaweza kuelezea jinsi bidhaa hizi zilivyoelezwa kwako
  - Dodosa kuhusu nani alieyemwelezea kuhusu bidhaa hizi
  - Dodosa ni jinsi gani maelezo hayo yalikuwa sahihi
  - Dadisi kuhusu jinsi ya kuboresha maelezo hayo
12. Je unaweza kuniambia njia nzuri zaidi ya kuuza virutubishi vya nyongeza kwa wanawake wajawazito katika jamii hii?
  - Dodosa kuhusu njia za kutangaza bidhaa
  - Dodosa kuhusu njia nzuri za usambazaji
13. **Asante kwa muda wako. Je kuna kitu kingine chochote ungependa kujadili ambacho sijakiuliza hapa?**



### Utangulizi:

1. Unaweza kuniambia kuhusu jukumu lako katika jamii hii?
2. Tafadhali niambie kuhusu ratiba yako ya siku kama mhudumu wa afya
3. Je unaweza kunielezea rasilimali zilizopo kwa ajili ya huduma za afya ya wajawazito katika jamii hii (Dodosa kuhusu dawa, wafanyakazi, vifaa kazi, n.k)

### Huduma wakati wa ujauzito

Sasa ningependa kufahamu zaidi kuhusu afya wakati wa ujauzito katika jamii hii.

4. Je unaweza kuelezea muonekano wa mama mjamuzito mwenye afya njema?
5. Je unaweza kunielezea magonjwa ambayo yanawasumbua wanawake wajawazito katika jamii hii?
  - Dadisi kuhusu ukubwa wa magonjwa hayo
  - Dadisi madhara ya kutotibu magonjwa hayo
  - Dadisi visababishi vya kila ugonjwa
  - Dadisi udhibiti/kinga kwa kila ugonjwa
  - Dadisi matibabu yake
6. Unaweza kuniambia ni magonjwa gani ambayo wewe unayahofia zaidi?
  - a. Dadisi kuhusu wasemavyo watu waliokwisha ugua/simulizi halisi
7. Naomba unielezee huduma anazopata mwanawake mjamzito katika kipindi chote cha ujauzito
  - Dadisi kuhusu ushauri wa lishe wanaopewa wanawake wajawazito
  - Dadisi kuhusu rasilimali /huduma wanazopewa wanawake wajawazito
  - Dadisi kama wanafuata ushauri waliopewa
  - Dadisi kama rasilimali/huduma zinaendana na ushauri
  - Dadisi kwa nini wanawake wanafuata ushauri
  - Dadisi kwa nini wanawake hawafuati ushauri
  - Dadisi kuhusu utafutaji wa huduma za afya (Muda wa kufika kliniki, kujifungua katika kituo cha afya, upatikanaji wa dawa za madini chuma, minyoo, idadi ya maudhurio)
8. Ni vikwazo/changamoto gani wanawake wajawazito wanazipata katika jamii hii zinazoweza kuathiri afya zao wakati wa ujauzito?
  - Dadisi kuhusu msaada wa jamii/familia anaupata kukabiliana na changamoto/vikwazo hivyo
  - Dadisi kuhusu msaada anaupata katika kutafuta huduma za afya

### VIRUTUBISHI VYA NYONGEZA

Hii ni taarifa nzuri. Sasa napenda kusikia mapendekezo yako kuhusu uandaaji wa mpango wa kuanza kutoa virutubisho vya nyongeza kwenye chakula.

9. Je unaweza kuelezea ni jinsi gani virutubishi vya madini chuma na vitamini ya folic acid zinaweza kumsaidia mwanamke kuwa na afya nzuri kipindi cha ujauzito?
  - a. Dadisi kuhusu magonjwa yanayoweza kuzuiliwa
  - b. Dadisi kuhusu chanzo cha madini chuma na vitamini ya folic acid

- c. Dadisi upatikanaji wake
  - d. Dadisi kuhusu gharama zake na kama anaweza kuzinunua
  - e. Dodosa kuhusu kugawana au kupeana dawa hizo
  - f. Dodosa kuhusu vitu vinavyoifanya ihitajike/ipendwe
  - g. Dodosa kuhusu sababu zinazoifanya isipendwi
  - h. Dodosa kuhusu mtazamo wake juu ya dawa hii
10. Je unaweza kuelezea bidhaa nyingine inayofanana na hii ambayo wanawake wajawazito wanatumia wakati wa ujauzito?
- a. Dadisi chanzo cha dawa/virutubishi
  - b. Dadisi kuhusu kumudu gharama zake
  - c. Dodosa kuhusu kugawana au kupeana dawa hizo
  - d. Dodosa kuhusu vitu vinavyoifanya ihitajike/ipendwe
  - e. Dodosa kuhusu bidhaa ambazo hazipendwi
  - f. Dodosa kuhusu kukubalika kwa virutubishi vya nyongeza
  - g. Dodosa mtazamo kuhusu bidhaa
11. Je unaweza kuniambia njia nzuri zaidi ya kuuza virutubishi vya nyongeza kwa wanawake wajawazito katika jamii hii?
- Dodosa kuhusu njia za mawasiliano zinazoaminika
  - Dodosa kuhusu njia za usambazaji
  - Dodosa kuhusu jinsi ya kuelezea virutubishi vya nyongeza kwa wanawake
  - Dadisi njia nzuri za kuhakikisha bidhaa inatumika kwa usahihi
12. Asante kwa muda wako. Je kuna kitu kingine ungependa kujadili ambacho sijakiuliza hapa?

