

# External evaluation of mobile phone technology-based nutrition and agriculture advisory services in Africa and South Asia

Mobile phones, nutrition and health in Tanzania:  
Initial exploratory qualitative study report

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e-Pact is a consortium led by Oxford Policy Management and co-managed with Itad

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## Executive summary

### The mNutrition intervention in Tanzania

mNutrition is a five-year global initiative supported by the Department for International Development (DFID) since 2013, organised by the GSM Association (GSMA), and implemented by in-country mobile network operators (MNOs) and third party providers to use mobile technology to improve the health and nutritional status of children and adults in low-income countries around the world. mNutrition has two major anticipated outcomes. The first is developing cost-effective, sustainable business models for mobile phone-enabled nutrition and agriculture services for one million households in Africa and Asia that can be replicated in other countries. The second is to promote behaviour change around key farming practices and dietary and child feeding practices that are likely to result in improved nutritional health within a household.

DFID has committed to conducting an independent evaluation of mNutrition. mNutrition is implemented through 14 existing mAgri and mHealth programmes in 12 countries throughout sub-Saharan Africa and South Asia. Given budgetary limitations the decision was made to select two countries for inclusion in the evaluation: the mHealth programme in Tanzania and mAgri programme in Ghana.

In Tanzania mNutrition is implemented through the 'Healthy Pregnancy, Healthy Baby' (HPHB) SMS (text messaging) service. The mass media programme accompanying the service is called Wazazi Nipendeni (WN). The public-private partnership was initiated by the Ministry of Health and Social Welfare, with financial support from the US Government Centers for Disease Control and Prevention (CDC). WN is available nationally and on all phone networks.

The HPHB SMS Service sends free text messages in Swahili on a range of pregnancy and early childhood issues. Nutrition-related content was a small component of the original HPHB SMS Service but was extended substantially with the addition of content contributed through GSMA under the mNutrition programme (approximately 120 nutrition messages). The resulting product will be referred to as Wazazi Nipendeni plus mNutrition in this report.

### Evaluation design

The aim of the impact evaluation is to assess the impact, cost-effectiveness and commercial viability of mNutrition. The evaluation is being conducted by a consortium of researchers from Gamos, the Institute of Development Studies (IDS) and the International Food Policy Research Institute (IFPRI). The team draws on a number of methods and interlinked components to gather evidence about the impact of the mNutrition intervention in Tanzania, including:

- A **quantitative impact evaluation**, employing a randomised control design to determine the causal effect of the programme on the impact on dietary diversity, infant and young child feeding (IYCF) practices and child anthropometry. The quantitative team will conduct large-scale household surveys at the start of the programme implementation and two years later in both the treatment communities, which will receive door-to-door offers to sign up to the service, and the control communities, which will not receive such offers but will still be able to access the Wazazi Nipendeni plus mNutrition intervention.
- A **qualitative impact evaluation**, which consists of three qualitative data collection rounds (i.e. an initial qualitative exploratory study, in-depth case studies at midline and rapid explanatory qualitative work after the quantitative endline survey data collection) and aims

to provide understanding of the context, underlying mechanisms of change and the implementation process of mNutrition.

- A **business model and cost effectiveness evaluation**, employing stakeholder interviews, commercial and end user data, document analysis and evidence from the quantitative and qualitative evaluation to generate a business model framework and estimate the wider imputed benefits from the value-added service for the range of stakeholders involved.

## Audience of the evaluation

The primary target user of the evaluation results is DFID, along with other key stakeholders including GSMA and its national members in Tanzania, including WN and local MNOs implementing mNutrition services; government staff, in particular the Ministry of Health, Community Development, Gender, Elderly and Children (MoHCDGEC) and the Tanzania Food and Nutrition Centre (TFNC); international agencies and donors; as well as community-level health and nutrition workers.

## This report

This report presents the thematic analysis of the findings from the initial qualitative exploratory study carried out between October and November 2016 in six purposefully selected villages in Iringa region. The first qualitative data collection phase is designed as a rapid qualitative exploratory study, which allows contextual analysis of social, economic and environmental factors that may hinder or facilitate the uptake of the Wazazi Nipendeni plus mNutrition intervention and its effectiveness in promoting behaviour change. The initial exploratory qualitative study focuses on four thematic aims:

1. Access to, use of and attitudes towards mobile phone technology by mothers and pregnant women;
2. Barriers to and facilitators of the uptake of mobile phone-based messages by mothers and pregnant women;
3. Information needs and current information-seeking behaviours related to health and nutrition among pregnant women, breastfeeding mothers and mothers of children below the age of two years; and
4. Social, economic and environmental factors that may influence behaviour change related to the nutrition of infants, young children, pregnant and breastfeeding women.

Gender and poverty are taken as cross-cutting issues to be considered across all four themes. Findings from the initial exploratory study will form an important basis for the more in-depth qualitative midline and the endline qualitative data collection.

The findings from the initial exploratory qualitative study will inform analysis of the quantitative and business model/cost-effectiveness baseline data. Findings from all three components will also be integrated in a mixed methods baseline report of the Wazazi Nipendeni plus mNutrition impact evaluation in Tanzania. Findings will also be shared with the WN mNutrition programme teams as part of ongoing regular communications between evaluation and programme staff to support and inform programme decision-making. The report findings will also be presented and discussed as part of an upcoming 'Lessons Learned' stakeholder workshop, which is planned to take place in Tanzania with key external stakeholders in early 2018.

## Methods

Multiple data collection tools were used including semi-structured in-depth interviews (IDIs) with pregnant women and mothers, key informant interviews (KIIs), expert interviews (EIs), community member interviews and focus group discussions (FGDs). In total 31 individual interviews and 12 FGDs were conducted.

The sample selection for the initial exploratory qualitative study was purposive and closely linked to the quantitative baseline sample selection. Six village sites were chosen from the sample of 180 villages selected for the quantitative baseline survey: three villages in Iringa Rural district and three villages in Mufindi district. At community level participants were purposefully sampled to illustrate characteristics of different relevant sub-groups, including vulnerable groups such as adolescents and very poor people. The selection of the participants was informed by the initial community-mapping exercise.

The qualitative sample is not intended to be representative or allow for generalisable conclusions, but to provide initial insights into multiple contextual factors. The qualitative sample for the initial exploratory study is not a longitudinal sample and is different from the samples that will be selected for the in-depth qualitative midline and endline studies.

## Summary of key findings

### **Access to, use of and attitudes towards mobile phones**

Access to a mobile phone is generally good in both districts, although there is a gendered dimension in ownership and use. Young women and young unmarried women are often excluded or have only limited or controlled access to a mobile phone. This may restrict access to Wazazi Nipendeni plus mNutrition messages.

Mobile phone-sharing is uncommon among couples due to trust issues, and messages sent to one household member may not be shared with other members.

Women are comfortable and familiar with text messages (SMS) and able to read them. Wazazi Nipendeni plus mNutrition messages might be an effective approach to inform pregnant women/mothers, as long as they have access to a mobile phone.

### **Potential barriers to and facilitators of the uptake of the Wazazi Nipendeni plus mNutrition messages**

Mobile network coverage is good in all six villages and Wazazi Nipendeni plus mNutrition messages should arrive regularly and without delay.

Access to electricity poses a problem for many households in Iringa Rural and could cause messages to be delayed or missed if the phone is not charged somewhere outside the house in a timely manner. If a mobile phone is switched off (e.g. because the battery is empty), text messages that were sent to this phone will be stored on the server for a maximum of 48 hours and then disposed of. This applies to all mobile network providers in Tanzania.

Multiple SIM card use was common to capture the best tariffs and network coverage. However, as dual SIM card phones were still rare, most people had to manually exchange SIM cards and could therefore easily miss Wazazi Nipendeni plus mNutrition messages.

### **Information needs and information-seeking behaviours**

While most women are exposed to at least some information on child and maternal nutrition, exposure to information is infrequent, short and often lacks depth. Women also identified various,

specific information needs that are not sufficiently addressed during routine antenatal check-ups or occasional nutrition advice provided during growth-monitoring sessions. Wazazi Nipendeni plus mNutrition may help to address existing information gaps.

There was a need for contextualised information on breastfeeding, complementary feeding and child feeding that takes women's individual living conditions into consideration (e.g. work, lack of time and resources).

Facility-based health workers are the most trusted source for health and nutrition information as their advice is perceived to be supported and approved by the government. Appropriate framing of the Wazazi Nipendeni plus mNutrition messages is important to build trust and ensure uptake.

Information delivery channels that encourage active interaction and communication are preferred. Uptake of one-way information delivery through Wazazi Nipendeni plus mNutrition messages might be limited.

### **Social, economic and environmental factors that may influence behaviour change**

Poverty and low income might pose a substantial barrier to change in dietary practices as women/households cannot afford nutritious foods. Additionally, limited access to and availability of fresh foods, limited time for food preparation and limited agricultural diversification may act as barriers to improvements in dietary diversity if not considered sufficiently in the Wazazi Nipendeni plus mNutrition messages.

Delayed antenatal visits, frequent alcohol consumption among both mothers and fathers, and poor access to improved water and sanitation may jeopardise the impact of the Wazazi Nipendeni plus mNutrition messages on nutritional outcomes.

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## List of abbreviations

CDC	Centers for Disease Control
DFID	Department for International Development
GSMA	GSM Association
EI	Expert Interviews
FGD	Focus Group Discussion
HPHB	Healthy Pregnancy, Healthy Baby
IDI	In-Depth Interview
IDS	Institute of Development Studies
IFPRI	International Food Policy Research Institute
IYCF	Infant and Young Child Feeding
KII	Key Informant Interview
M&E	Monitoring and Evaluation
MNO	Mobile Network Operator
MoHCDGEC	Ministry of Health, Community Development, Gender, Elderly and Children
NBS	National Bureau of Statistics
OCGS	Office of Chief Government Statistician
OPM	Oxford Policy Management
SMS	Short Messaging Service
TAM	Technology Acceptance Model
TDHS-MIS	Tanzania Demographic and Health Survey and Malaria Indicator Survey
TFNC	Tanzania Food and Nutrition Centre
WN	Wazazi Nipendeni

# 1 Introduction

## 1.1 mNutrition intervention in Tanzania

mNutrition is a five-year global initiative supported by the Department for International Development (DFID) since 2013, organised by the GSM Association (GSMA), and implemented by in-country mobile network operators (MNOs) to use mobile technology to improve the health and nutritional status of children and adults in low-income countries around the world.

mNutrition has two major anticipated outcomes. The first is developing cost-effective, sustainable business models for mobile phone-enabled nutrition and agriculture services for one million households in Africa and Asia that can be replicated in other countries. The second is to promote behaviour change around key farming practices and around dietary and child feeding practices that are likely to result in improved nutritional health within a household (see Annex A for GSMA's mHealth Theory of Change).

The potential to utilise mobile technology to change attitudes, knowledge, behaviours, and practices around health and agriculture for improved nutritional status has been recognised for some time, but to date there have been no rigorous evaluations of m-services at scale. In addition to internal programme monitoring and evaluation (M&E) processes, DFID has committed to conducting a rigorous independent evaluation of mNutrition in order to generate high-quality evidence on the impact, cost-effectiveness and sustainability of mobile phone-based advisory services in nutrition and agriculture.

mNutrition is implemented through 14 mAgri and mHealth programmes in a total of 12 countries throughout sub-Saharan Africa and South Asia. Given the budgetary limitations of the mNutrition programme the decision was made to select two countries for inclusion in the evaluation: the mHealth programme in Tanzania and mAgri programme in Ghana.

In Tanzania, mNutrition is implemented through the 'Healthy Pregnancy, Healthy Baby' (HPHB) SMS (text messaging) service. The mass media programme accompanying the service is called Wazazi Nipendeni. The Wazazi Nipendeni programme is a US Centre for Disease Control and Prevention (CDC) funded project bringing together multiple partners contributing towards shared goals. Phase 1 of the programme, launched in 2012, was initially developed in coordination with the Tanzania Capacity Communication Project (TCCP), a USAID funded programme led by Johns Hopkins Centre for Communication Programmes (JHCCP). Wazazi Nipendeni was one of several behaviour change communication programmes using methods as diverse as TV drama series, radio distance learning for community health volunteers and several integrated mass media campaigns. The public-private partnership was initiated by the Ministry of Health and Social Welfare<sup>1</sup> with financial support from CDC.<sup>2</sup> WN is available nationally and on all phone networks.

The HPHB SMS Service sends free text messages with health care information to pregnant women, mothers with newborns, male supporters and general information seekers in Tanzania to drive health-seeking behaviour. The SMS messages are sent in Swahili, originally to women up to

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<sup>1</sup> MoHSW has since been renamed the Ministry of Health, Community Development, Gender, Elderly and Children (MoHCDGEC).

<sup>2</sup> The Wazazi Nipendeni campaign and text messaging service is funded by the US Government through USAID, the CDC, the US President's Malaria Initiative, and US President's Emergency Plan for AIDS Relief (PEPFAR). It is run in coordination with the National Malaria Control Program, National AIDS Control Program and Health Promotion and Education Section. On the ground, health facility orientation support is also provided by the US Government, Aga Khan Health Services and Canadian International Development Agency. Other implementing partners include Jhpiego, EGPAF, the Mwanzo Bora Program, CCBRT, Tunajali Project, PLAN International, Aga Khan Foundation and others.

16 weeks post-partum on a range of pregnancy and early childhood issues. Anyone interested in receiving healthy pregnancy information and appointment reminders can text the word 'MTOTO' (child) to the short code 15001. Registrants receive instructional messages, allowing them to indicate the woman's current week or month of pregnancy (or the age of the newborn baby) during the enrolment process. This process allows the recipients to receive specific text messages relevant to the time and stage of pregnancy.

The mNutrition programme has supported mHealth projects in 8 countries through the development of nutrition content, and GSMA has assisted projects with product development primarily through user experience research business intelligence support. Nutrition-related content was a small component of the original HPHB SMS Service but was extended substantially with the addition of content contributed through GSMA under the mNutrition programme. mNutrition adds roughly 120 nutrition messages delivered to caregivers of children up to five years old. The resulting product will be referred to as Wazazi Nipendeni plus mNutrition in the following sections of this report.

The original Wazazi Nipendeni text messaging service did not have the capability to deal with voice messages, but voice messages were developed as part of the local content development process in Tanzania. Under a separate agreement, GSMA subsequently commissioned HNI to incorporate the mNutrition content into their 321 service, provided in partnership with Vodafone. In contrast to Wazazi Nipendeni, the 321 service is a 'pull' type of service, whereby users dial a shortcode and navigate through interactive menus to find the information they are seeking. The system mostly plays audio clips to users, rather than sending SMS text messages. 30 IVR scripts were selected to be integrated into the 321 Health service, and were being recorded at the time of the baseline field visits.

## 1.2 Overview of the evaluation design

The mNutrition evaluation is intended to understand and measure the impact, cost-effectiveness and commercial viability of the mNutrition product using a mixed methods evaluation design. The evaluation includes a quantitative component, a qualitative component and a business model analysis.

The evaluation will address the following research questions as stated in the DFID terms of reference (TOR) (see Annex B):

1. What are the impacts and cost-effectiveness of mobile phone-based nutrition services on nutrition, health and livelihood outcomes, especially among women, children and the extreme poor?
2. How effective are mobile phone-based services in reaching, increasing the knowledge and changing the behaviour of the specific target groups?
3. Has the process of adapting globally agreed messages to local contexts led to content that is relevant to the needs of children and pregnant women and mothers in their specific context?
4. What factors make mobile phone-based services effective in promoting and achieving behaviour change (if observed), leading to improved nutrition and livelihood outcomes?
5. How commercially viable are the different business models being employed at country level?

6. What lessons can be learned about best practices in the design and implementation of mobile phone-based nutrition services to ensure (a) behaviour change and (b) continued private sector engagement in different countries?

The mNutrition intervention is being externally evaluated in two countries: in Ghana, where the intervention is implemented via an existing mAgriculture programme; and in Tanzania (the focus of this report), where the intervention is implemented via an existing mHealth partnership. The evaluations are being conducted by a consortium of researchers from Gamos, the Institute of Development Studies (IDS) and the International Food Policy Research Institute (IFPRI). The team draws on a number of methods and interlinked work streams to gather evidence about the impact of the mNutrition intervention in Tanzania. These include:

- **A quantitative impact evaluation**, employing a randomised control trial to determine the causal effect of the programme on increasing the knowledge and changing the behaviour of mothers and pregnant women with regards to their dietary diversity, the dietary diversity of their children (under three years old) and infant and young child feeding (IYCF) practices. The quantitative evaluation will focus on the estimation of the impact on dietary diversity, IYCF practices and child anthropometry. The quantitative team will conduct large-scale household surveys at the start of the programme implementation and two years later (i.e. the baseline and endline of the evaluation) in both the treatment communities, which will receive door-to-door offers to sign up to the service, and the control communities, which will not receive such offers but will still be able to access the Wazazi Nipendeni plus mNutrition intervention. The quantitative evaluation will be conducted in the Iringa region where WN has no existing relationships with health clinics or other non-governmental organisations (NGOs). Therefore, it can be assumed that the use of the basic WN product is extremely low, thus limiting the potential uptake of the Wazazi Nipendeni plus mNutrition programme in control group areas.<sup>3</sup>
- **A qualitative impact evaluation**, which consists of three qualitative data collection rounds (i.e. an initial qualitative exploratory study, in-depth case studies at midline and rapid explanatory qualitative work after the quantitative endline). The qualitative evaluation workstream aims to provide understanding of the context within which Wazazi Nipendeni plus mNutrition is embedded and which might facilitate or hinder uptake of the intervention. The qualitative impact evaluation also explores the underlying mechanisms of change in response to the intervention and assesses implementation processes. Qualitative data collection will be conducted in a sub-sample of the quantitative communities in the Iringa region. Qualitative data collection will only be conducted in treatment communities in order to provide in-depth information on the effects of the intervention. **A business model and cost effectiveness evaluation**, employing stakeholder interviews, commercial data and document analysis to estimate the wider imputed benefits from the value-added service for the range of stakeholders involved. It will relate the model to GSMA's Theory of Change (see Annex A) and consider the effectiveness of the customer journey.

The primary target user of the evaluation results is DFID, along with other key stakeholders including GSMA and its national members (including local MNOs implementing mNutrition services), national governments (in particular the Ministry of Health and Ministry of Agriculture), international agencies and donors, as well as community-level health and agriculture extension workers. Findings will be shared with GSMA through sharing of all draft and final reports, regular calls and email exchange, a newsletter and two external stakeholder events planned per country.

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<sup>3</sup> For further details see Barnett, I., Batchelor, S., Gilligan, D., Haddad, L., Hidrobo, M., Ledlie, N., Palloni, G., Scott, N., and Shyam, T. (2017) 'External evaluation of mobile phone technology based nutrition and agriculture advisory services in Africa and South Asia: Inception Report'. (revised version) Brighton: IDS.

GSMA provided feedback on the initial drafts of this report and will receive a copy of the final report.

### **1.3 Purpose and scope of the initial exploratory qualitative study**

This report presents the thematic analysis of the findings from the first qualitative data collection round carried out between October and November 2016 in six purposefully selected villages in the Iringa region in two districts: Iringa Rural and Mufindi. The selection of villages was informed by the quantitative baseline sample locations in order to provide insights into different geographic contexts. Three villages from Iringa Rural – Ariga, Isana and Oloro – and Mufindi – Bolira, Esula and Lomola – were selected for the initial exploratory study. Data collection was carried out by Oxford Policy Management Tanzania (OPM-T) in close coordination with the IDS qualitative team led by Dr Inka Barnett.

The first qualitative data collection is designed as an initial qualitative exploratory study, which allows a first contextual analysis of social, institutional and environmental factors that may hinder or facilitate the uptake of the Wazazi Nipendeni plus mNutrition intervention and its effectiveness in promoting behaviour change. In particular, the initial exploratory qualitative study aims to gain insights into the use and acceptability of mobile phones, barriers to and facilitators of the uptake of mobile phone-based messages, information needs related to nutrition especially of mothers and pregnant women, and factors that may influence behaviour change.

The findings from the initial exploratory qualitative study will be combined and triangulated with the quantitative and business model/cost-effectiveness baselines in a workshop planned for August 2017. The two-day workshop will inform the development of the integrated mixed methods baseline report of the Wazazi Nipendeni plus mNutrition impact evaluation in Tanzania (see Annex C for a timeline of the different components of the evaluation). Findings will also be shared with the WN mNutrition programme teams as part of ongoing regular communications between evaluation and programme staff to support and inform programme decision-making. The report findings will also be presented and discussed as part of an upcoming 'Lessons Learned' stakeholder workshop, which is planned to take place in Tanzania with key external stakeholders in early 2018.

### **1.4 Organisation of the report**

After the description of the methodology in section 2, a brief overview of the profiles of the six villages selected for the qualitative data collection will follow in section 3. This section highlights, in particular, differences in health and nutrition that may be relevant for the uptake and effectiveness of the mNutrition interventions. Section 4 presents the thematic findings of the analysis structured around the four aims of the initial exploratory qualitative study (see section 2.1). For each aim, potential implications of the findings for the uptake and effectiveness of mNutrition as well as for the evaluation design are presented. Section 5 draws together the findings in the conclusion.

## 2 Methodology

### 2.1. Aims of the initial exploratory qualitative study

The initial exploratory qualitative study focuses on four thematic aims, which are briefly explained below:

1. Access to, use of and attitudes towards mobile phone technology by mothers and pregnant women;
2. Barriers to and facilitators of the uptake of mobile phone-based messages by mothers and pregnant women;
3. Information needs and current information-seeking behaviours related to health and nutrition among pregnant women, breastfeeding mothers and mothers of children below the age of two years; and
4. Social, economic and environmental factors that may influence behaviour change related to the nutrition of infants, young children, pregnant and breastfeeding women.

The qualitative evaluation work stream is closely integrated with the quantitative and business model/cost-effectiveness evaluation at all stages of the evaluation to inform, enhance and triangulate the design, data collection and analysis within the overall mixed methods design framework. The initial exploratory qualitative study aims to inform the quantitative baseline analysis, and also informs, complements and enhances the business model analysis and data collection.

The sequence of initial exploratory qualitative study, midline case studies and explanatory qualitative endline will, in combination, help to address the following research objectives stated in the DFID TOR (see Annex B) and the specific objectives of GSMA:

- What factors make mobile phone-based services effective in promoting and achieving behaviour change (if observed), leading to improved nutrition and livelihood outcomes?
- Has the process of adapting globally agreed messages to local contexts led to content that is relevant to the needs of children and women in their specific contexts?
- What lessons can be learned about best practices in the design and implementation of mobile phone-based nutrition services to ensure (1) behaviour change and (2) continued private sector engagement in different countries?

#### 2.1.1 Access to, use of and attitude towards and acceptability of mobile phone technology

Under the first aim, the initial exploratory qualitative study seeks to understand access to and use of mobile phone technology by mothers and pregnant women. Particular attention is therefore paid to women's access to and use of mobile phones, the practices of mobile phone-sharing with their partner or spouse, and which technical functions are used most and which ones least. The initial exploratory qualitative study also explores attitudes towards mobile phones in general (e.g. how useful women perceive mobile phones to be in their daily lives), MNOs and factors the women consider when selecting a mobile phone network.

## 2.1.2 Barriers to and facilitators of the uptake of mobile phone-based messages

Under the second aim, barriers to and facilitators of the reception and uptake of mobile phone-based messages are investigated from a technological perspective and from the perspective of women. The technological assessment includes questions on access to electricity, network coverage and stability, hardware issues, mobile phone credit, behaviours and practices related to the use of SIM cards. To gain in-depth understanding of women's perspectives on mobile phones, the initial exploratory qualitative study draws on the widely used Technology Acceptance Model (TAM) (Venkatesh and Davis 2000; Venkatesh and Bala 2008). Informed by the TAM, perceived ease of use, self-efficacy and control over mobile phone technology, and perceived usefulness of mobile phone-based information are explored.

## 2.1.3 Information needs and current information-seeking behaviours of mothers and pregnant women

Under the third aim, the initial exploratory qualitative study explores existing information gaps and needs related to child and maternal nutrition. Information needs are investigated from the point of view of women (pregnant women, breastfeeding mothers, mothers of young children), health care workers and national nutrition experts. Women's current information-seeking behaviours will be explored by asking questions around what kinds of information are currently available to them, which information providers they trust and why, which channels and delivery modes for information they prefer, and what barriers they face when attempting to access information.

## 2.1.4 Social, economic and environmental factors that may influence behaviour change

Under the fourth aim, barriers to and facilitators of behaviour change are investigated with a focus on social (e.g. traditions, culture, female participation in decision-making), economic (e.g. challenges related to access to nutritious and fresh food) and environmental (e.g. access to water, seasonal availability of food) factors.

## 2.1.5 Data collection methods

Multiple data collection tools were used to obtain qualitative data from different sources and perspectives. The use of different data sources is important to allow for triangulation of different qualitative findings. The main data collection tools were semi-structured in-depth interviews (IDIs) with mothers and pregnant women, key informant interviews (KIIs), expert interviews (EIs) and community member interviews, and focus group discussions (FGDs) – see Table 2.1.

**Table 2.1: Data collection tools for the initial exploratory qualitative study per region and district**

Interview category	Iringa Rural			Mufindi			National	TOTAL
	Ariga	Isana	Oloro	Bolira	Esula	Lomola		
In-depth interviews								
Mothers	1	1	1	1	1	1		6
Pregnant women	1	1	1	1	1	1		6

Key informant interviews	2	2	3	3	3	3		16
Expert interviews	0	0	0	0	0	0	3	3
Total IDIs	4	4	5	5	5	5	3	31
Focus group discussions								
FGDs with fathers/elderly women	1 (fathers)	1 (elderly)	1 (fathers)	1 (elderly)	1 (elderly)	1 (fathers)		6
FGDs with mothers/pregnant women	1 (mothers)	1 (pregnant)	1 (pregnant)	1 (mothers)	1 (mothers)	1 (pregnant)		6
Total FGDs	2	2	2	2	2	2		12

**In-depth interviews** – these were conducted with mothers and pregnant women who owned or had regular access to a mobile phone. Interviews were guided by a semi-structured topic guide to ensure that similar ground was covered in each interview. All IDIs were conducted by two team members to provide complementary insights, check for consistency and ensure accuracy. Notes were taken during the interviews and they were audio-recorded (after receiving prior consent).

**Key informant interviews** – these were conducted locally. KIIs were carried out with influential people in villages including village chairmen, community health workers and local mobile phone kiosk operators. Interviews were conducted by two team members, guided by a semi-structured interview schedule and audio-recorded with interviewees' consent.

**Expert interviews** – these were conducted with three national experts on nutrition in Tanzania to triangulate the findings collected with the other tools and to set the sub-national findings into context. EIs were guided by a topic guide, audio-recorded and conducted by a post-doctoral researcher based at IDS.

**Focus group discussions** – these were carried out with 6–9 participants per group. The aim was to select heterogeneous groups of women (by occupation, age, number of children) including mothers only (with children under two years old) or pregnant women only. FGDs were also conducted with elderly women to look at traditions relating to feeding that might prove a barrier to adopting new information; and fathers (with children under two years old) to gain insights into dietary practices and patterns in the villages and use of mobile phones. All FGDs were facilitated by two team members and discussions were audio-recorded and detailed notes taken. A topic guide led the discussion and provided sufficient flexibility to allow participants to raise and discuss matters that they felt were relevant and important.

### 2.1.5.1 Development and pilot-testing of the tools

The qualitative fieldwork was conducted by OPM-T in close collaboration with IDS. IDS drafted the data collection tools that were informed by the desk review (Barnett and Srivastava 2017) and the landscaping analysis (Barnett, Scott, Batchelor and Haddad 2016) conducted in the initial stages of the evaluation. The review focused on the primary outcomes of the impact evaluation, to assess the impact of mNutrition on child undernutrition, IYCF and female dietary diversity. The specific aims of the review were to summarise evidence on: (a) determinants of undernutrition in Tanzania, with a specific focus on determinants of women's dietary diversity and IYCF; and (b) the use of mobile phone technology for health in Tanzania, with a specific focus on experiences, lessons learned and impact of existing m-health and m-nutrition interventions. The purpose of the

landscaping analysis was to help the evaluation team to understand the landscape they were operating in, so that they could choose a context-specific evaluation design that stood the greatest chance of finding answers rigorously. The landscaping review summarises what we know about behaviour change in nutrition, explores evidence on the role of mobile phones in nutrition-related behaviour change and surveys the wider mobile technology and m-development landscape.

The topic guides and interview schedules were then extensively reviewed, discussed and refined during a six-day IDS/OPM-T training workshop with all field researchers in Iringa town from 24 to 29 October 2016. The workshop consisted of detailed discussions of every question and prompts, and the sampling approach. Modification of and additions to questions and the order of questions were made with the team during the workshop. The team also tested the topic guides in role plays to gain experience of the guides prior to going into the field. This was followed by pilot-testing of the tools in a non-sample village in Iringa Rural. Following the pilot, the tools were further edited and translated into Swahili by the IDS/OPM-T team. The final set of topic guides are attached as Annex D.

### **2.1.5.2 Data collection implementation**

Data collection was conducted by two teams of male and female researchers, in addition to a two-member OPM-T staff team, both with extensive experience in qualitative evaluation, who regularly monitored the data collection process and led debrief sessions every day after the data collection. In order to facilitate open and honest discussion, the female team conducted all FGDs with mothers and pregnant women. The male team conducted all FGDs with fathers and male key informants. Each research activity was conducted by two researchers working in a pair, one of whom worked as an interviewer/facilitator and the other as note-taker.

During the data collection period, the team stayed in Iringa town while working in the Iringa Rural villages and in Mafinga town while visiting the Mufindi villages. The village leader acted as the main focal person to initiate contact and also to ensure that participants were selected according to the selection criteria (see section 2.2).

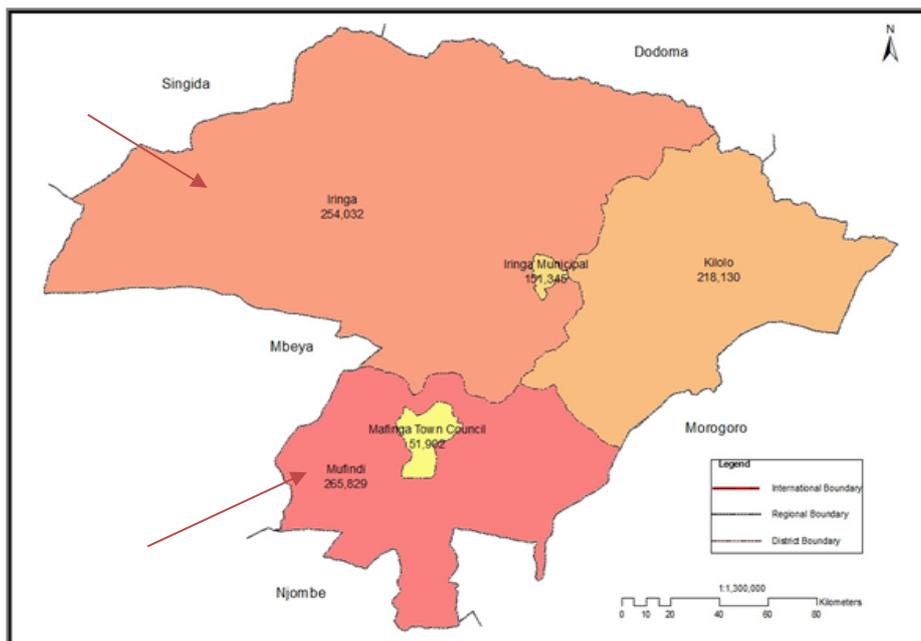
## **2.2 Sampling strategy**

### **2.2.1 Community selection**

#### **Selection of sites for evaluation**

The sample selection for the initial exploratory qualitative study was purposive and closely linked to the quantitative baseline sample selection. Six village sites were selected from the sample of 180 villages selected for the quantitative baseline survey in the Iringa region, which covered the districts of Iringa Rural, Kilolo and Mufindi (see figure 2.1). Two clusters of three villages were selected from two different districts: Iringa Rural and Mufindi.

**Figure 2.1: Map of Iringa region with districts where the study was conducted**



Source: United Republic of Tanzania Government Open Data Portal (2015): <http://www.nbs.go.tz/nbstz/index.php/english/statistics-by-subject/population-and-housing-census/697-2012-phc-regional-profiles>

## District and community selection

Iringa Rural and Mufindi were selected based on a review of key socio-economic indicators (e.g. poverty level, undernutrition prevalence, social and economic profile) for all three districts (Iringa Rural, Mufindi and Kilolo). The aim was to capture a diversity of contexts and to ensure that the qualitative field team did not overlap or interfere with ongoing quantitative baseline data collection.<sup>4</sup> The purposive selection of the six villages (i.e. three villages in each district – see Table 2.2) was carried out jointly by the OPM-T field research teams, the research leader and IDS team based on the following criteria:

- 1 **Different levels of access to health services in wards where the villages are located** – this was important to understand the perceived value of the Wazazi Nipendeni plus mNutrition intervention, which might vary depending on the level of formal health coverage.
- 2 **Geographical and livelihoods diversity** – the clusters in Iringa Rural are located close to peri-urban areas of Iringa town whereas the clusters in Mufindi are in remote rural areas. Iringa Rural has high levels of subsistence farming, while the more remote part of Mufindi district has tea plantations and timber (both industries employ a large part of the men and women in Mufindi district).
- 3 **Accessibility** – for practical and logistical reasons villages that were sufficiently accessible from town were selected so that the team could go to and return from villages within a day, and also to facilitate movement between villages for flexibility in completing research activities in clustered villages where necessary.

<sup>4</sup> To avoid contamination between the qualitative and quantitative research activities, it was decided to prioritise working in sub-villages that had not been visited by the quantitative teams for the survey. In view of this, priority was given to villages with multiple sub-villages that had not been visited by the quantitative team.

- 4 **Timing of quantitative work** – quantitative and qualitative data collection timelines overlapped. Sub-villages that had been visited by the quantitative teams for the actual survey by the start of the qualitative fieldwork were not considered to be sampled for the qualitative work. This was to avoid contamination of the quantitative sample.

**Table 2.2: Villages selected for initial exploratory study data collection for each district**

Region/ district	Iringa Rural			Mufindi		
Villages	Ariga	Isana	Oloro	Bolira	Esula	Lomola
<b>Livelihoods diversity</b>	Brick-making; small-scale farming (food crops); livestock-rearing	Rain-fed farming (food crops and sunflower); brick-making; and livestock-rearing	Farming; livestock-rearing; brick-making; and small business	Paid employment in companies; and food crop farming	Paid employment in tea companies or forest; and own tree plots	Tree ownership and private tea plantations; paid employment in companies
<b>Access to health services</b>	No health clinic; two community health workers	Health dispensary; two community health workers	No health clinic; two community health workers	One dispensary; two community health workers	No dispensary; two community health workers	One government dispensary; two community health workers
<b>Access to services (water and electricity)</b>	Poor access to safe drinking water; good electricity coverage	Poor access to safe drinking water; poor access to electricity	Poor access to water	Good access to water supply; good access to electricity	Good access to water supply; good access to electricity	Good access to water supply; good access to electricity

The size of the qualitative sample (six villages) is based on the judgement of the maximum coverage possible for the initial exploratory qualitative study, given the available time and budget for the qualitative evaluation.

### 2.2.2 Participant selection

At village level, participants were purposefully sampled to illustrate characteristics of different relevant sub-groups including vulnerable groups (e.g. adolescent mothers, very poor mothers), and to allow understanding of the contextual issues that may affect the products in different settings (see Table 2.3 for a summary of selection criteria employed for the respondents). The selection of the participants was informed by the initial community-mapping exercise that the field teams conducted for each village with the village leader.

**Table 2.3: Summary of criteria employed for participant selection**

Participant	Criteria	To collect information about
<b>Pregnant woman</b>	Access to a phone within the household (including some adolescent pregnant women)	Current information-seeking behaviours and practices related to maternal and child nutrition; acceptability, familiarity and use of mobile phones; barriers to the use of mobile phones; barriers to reading and acting on mobile phone-based messages
<b>Mother of a child under two years old</b>	Has a child below two years Access to a phone within the household (including some poor/very poor mothers) <sup>5</sup>	Current information-seeking behaviours and practices related to child nutrition; acceptability, familiarity and use of mobile phones; barriers to use of mobile phones; barriers to reading and acting on mobile phone-based messages
<b>Village chairman</b>	Where it was not possible to interview the village chairman another well-informed village leader was identified, either the village executive officer or a sub-village chairman.	Local issues relating to maternal and child nutrition; acceptability, familiarity and use of mobile phones within community, including village access to services and support
<b>Health expert</b>	Someone who knows about the health issues and practices in the village. In contexts where the community health worker was not engaged in the community or where a more prominent source of health expertise was apparent in the village, an alternative health worker, such as the nurse at the dispensary, was interviewed.	Main threats to child health and wellbeing in this area; current child feeding and nutrition practices in this area; current information-seeking behaviours related to child feeding and nutrition
<b>Mobile kiosk operator</b>	Sells top-up vouchers for phones and/or offers phone-charging services in the village. Where more than one is available the choice was made based on experience and knowledge of the village and also availability for interview.	Acceptability and use of mobile phones in the village; usage and problems of phones
<b>Fathers</b>	Father of a child under two years old Access to a phone within the household	Fathers' perceptions of and attitude towards their wives/partners mobile phone use; current information-seeking behaviours and practices related to child feeding
<b>Elderly women</b>	Of an age that they could be a grandparent (approximately 35 and older) No phone access requirements, as the aim was to learn about infant and young child feeding and not mobile phone use	Information-seeking behaviours and practices related to child feeding; traditions related to child feeding

In each of the six villages, two women (one mother with a child or children under two years old and one pregnant woman) were recruited for IDIs, making 12 IDIs in total. These women had to have access to a mobile phone (owned or shared within the household). As noted above, the participants were purposefully selected for particular characteristics; these included not being resident in a sub-village that had been visited by the quantitative research team. OPM-T reviewed the sub-villages that had been visited by the quantitative team in each village and asked the village leaders not to select participants from those sub-villages. Given the selection criteria employed, the selected qualitative sample presents a variety of experiences of the nutritional needs of pregnant

<sup>5</sup> Determined based on education level and occupation.

and breastfeeding women and young children, and allows in-depth insights into contextual issues relevant for the uptake of the Wazazi Nipendeni plus mNutrition intervention.

Key informants are people presumed to have more specialist knowledge or authority on the issue being researched. Key informants were selected based on the objectives of the initial exploratory qualitative study and included village chairmen, or village representatives if the chairmen were not available, local health workers and local mobile kiosk operators. In total 16 local KIIs were conducted. Table 2.4 shows a summary of KIIs that were conducted and their communities.

**Table 2.4: Local key informant interviews**

KII number	Village	Characteristics of respondents
<b>Iringa Rural</b>		
1	Ariga	Health worker
2	Ariga	Sub-village chief
3	Isana	Health worker
4	Isana	Village chief
5	Oloro	Mobile kiosk operator
6	Oloro	Village chief
7	Oloro	Health worker
<b>Mufindi</b>		
1	Bolira	Village chief
2	Bolira	Health worker
3	Bolira	Mobile kiosk operator
4	Esula	Village chief
5	Esula	Health worker
6	Esula	Mobile kiosk operator
7	Lomola	Village chief
8	Lomola	Health worker
9	Lomola	Mobile kiosk operator

Three interviews were also conducted with national level experts on maternal and child nutrition – based at Tanzania Food and Nutrition Centre (TFNC) and UNICEF – in Tanzania in order to provide additional information on the national nutrition context relevant to the initial exploratory analysis.

In each of the six villages two FGDs were conducted: (1) with mothers of children under two years old or pregnant women; and (2) elderly women or fathers of children under two years old (the aim was to have some FGDs with elderly women and some with fathers). Each FGD involved 6–9 participants from the same village. FGDs were conducted separately for male and female participants as experiences of each group were anticipated to differ, in terms of use and acceptability of mobile phones, nutrition knowledge and behaviours (Barnett and Srivastava 2017). This translated into 12 FGDs in total in the six villages. See Table 2.5 for a summary of focus group participants in the villages.

**Table 2.5: Focus group discussions with fathers and community members with their characteristics**

FGD number	Village	Characteristics of participants
<b>Iringa rural</b>		
1	Ariga	6 fathers of children under two years old and with mobile phone access
2	Ariga	8 mothers of children under two years old and with mobile phone access (including very poor mothers)
3	Isana	8 elderly women (over 45 years of age and who were grandmothers) who may or may not have access to phone
4	Isana	8 pregnant women with access to a mobile phone (including 2 adolescent pregnant women)
5	Oloro	9 fathers of children under two years old and with mobile phone access
6	Oloro	7 pregnant women with access to a mobile phone
<b>Mufindi</b>		
1	Bolira	9 elderly women (over 45 years of age and who were grandmothers) who may or may not have access to phone
2	Bolira	9 mothers of children under two years old and with mobile phone access (including very poor mothers)
3	Esula	8 elderly women who may or may not have access to phone
4	Esula	6 mothers of children under two years old and with mobile phone access
5	Lomola	6 fathers of children under two years old and with mobile phone access
6	Lomola	7 pregnant women with access to a mobile phone (including 2 adolescent pregnant women)

## 2.3 Data management and analysis

All interviews and discussions conducted during the fieldwork were transcribed by the field researcher using the audio-recordings and notes. All transcripts were cross-checked by the research lead and translated into English from Swahili. All interviews in the villages were conducted in Swahili. A debriefing workshop, in addition to the daily debriefing, for the qualitative field team was conducted immediately following completion of data collection. The aim of the workshop was to discuss the fieldwork experience and challenges encountered, and to discuss and synthesise preliminary findings in relation to the four thematic aims of the initial exploratory qualitative study.

Data analysis was conducted by the qualitative research team at IDS led by Dr Inka Barnett. The qualitative data were analysed using a directed content analysis approach focused on the main qualitative evaluation questions (Patton 2008). Data analysis started with open coding of several interviews and the development of an initial coding scheme that guided the coding of the remaining data. To increase the rigour of the data analysis, coding was done by two UK-based researchers independently and their coding schemes were then discussed and modified into one joint scheme (see Annex E for the coding scheme that was used). While the scheme guided the coding, it was flexible enough to allow for unforeseen topics that emerged to be added at any point. Initial analysis results as well as the final report were shared with the field team and lead researcher in Tanzania to ensure the IDS team interpreted the findings correctly and to add additional details that were necessary. Qualitative data analysis software (NVivo) was used to manage and aggregate coded data.

IDS and all sub-contracted partners undertaking data collection have specific arrangements in place for handling data generated from the project in accordance with the Data Protection Act (1998) which includes the processing and storage of any sensitive personal data and maintenance of privacy. All intellectual property rights in any materials produced from the evaluation (including publication of research findings and any associated reports and data) remain the property of IDS and associated sub-contracted collaborators. DFID has unlimited access to any material produced

from the evaluation. In order to promote use and uptake of the evaluation findings and in line with DFID's Enhance and Open Access Policy, the evaluation team is committed to ensuring all major report outputs and associated data generated from this project are made publicly available in an accessible format.

## 2.4 Ethical approval

As an overall guiding principle, the research team sought to conduct itself in a professional and ethical manner throughout the initial exploratory study, with respect for integrity, honesty, confidentiality, voluntary participation, impartiality and the avoidance of personal risk. These principles were guided by the OECD (2010) DAC Quality Standards for Development Evaluation and DFID's (2011) Ethics Principles for Research and Evaluation, which will be followed for the duration of the evaluation.

National-level ethical approval for the initial exploratory qualitative study was obtained from the Tanzania Commission for Science and Technology (COSTECH) in July 2016, prior to the start of the fieldwork. Ethical review was also sought from the IDS Research Ethics Committee and was obtained in September 2016, also prior to the start of the fieldwork.

Informed written or oral consent was collected from all participants prior to the start of the interviews. The entire field team was trained on ethical data collection and signed an ethical conduct form prior to the start of the fieldwork. For confidentiality, all identifying variables – such as village or community names, district capitals and other locations – have been replaced by pseudonyms. Participants did not receive any reward or compensation for their participation in the interviews. Interviews were kept short and we do not believe that they were perceived as a burden by the participants that may have affected their responses.

All files containing raw and analysed data are securely stored in password-protected databases. Access to the data is restricted to the evaluation team.

## 2.5 Limitations

There are several methodological limitations that need to be considered. First, the sampling of the districts, communities and participants was done purposefully and might have introduced some selection bias. However, the team did their best to be as objective as possible during the sampling, using the data available and conducting a comprehensive initial mapping of the community to minimise selection bias, while capturing a variety of contextual settings that might influence the uptake of the Wazazi Nipendeni plus mNutrition intervention.

Second, the aim of this rapid initial exploratory qualitative study was to gain insights into contextual factors that may affect the uptake of the intervention. Time and budget allocated to this initial qualitative data collection were relatively small. This made it necessary for the team to restrict the number of communities that could be visited. Naturally, this limits the conclusions that can be drawn. However, the qualitative sample is not intended to be representative or allow for generalisable conclusions, but to provide first insights into multiple contextual factors. This limitation is also mitigated by the fact that the qualitative evaluation forms part of a wider mixed methods evaluation that will continue to draw on the other evaluation components in order to triangulate and compare accuracy and completeness of data, and to help formulate the design of future data collection tools (both qualitative and quantitative) and analysis for the remainder of the evaluation. It should also be highlighted that the initial exploratory qualitative study is very different

from the in-depth qualitative work planned for the midline, which will use a larger sample that will be independently drawn from the quantitative sample.

Third, all interviews were conducted by a team of young, educated field researchers. The characteristics of the field team might have affected the participants' comfort and degree of honesty when answering questions (e.g. introducing social desirability bias). However, the team were very experienced, were familiar with the local customs and dressed appropriately according to the local custom. All of these factors helped to make the participants feel at ease during interviews.

## 3 Village profiles

This section provides a brief description of the six villages selected for the initial exploratory qualitative study data collection. The description focuses on features and characteristics of each community that might be relevant with regards to the uptake and effectiveness of the Wazazi Nipendeni plus mNutrition intervention. As highlighted in section 2, the villages were purposefully selected to allow insights into different contexts within which the intervention would be embedded. The community profiles were developed based on the observations and questions of the field teams and complemented by information from literature sources (where available).

### 3.1 Iringa Rural district

#### 3.1.1 Villages in Iringa Rural

**Ariga** is located in the Kalenga ward. There are three sub-villages in Ariga, all of which have reasonably scattered populations. The main economic activity in Ariga is brick-making. In addition to this, residents are involved in small-scale farming of food crops including maize and green vegetables. A small proportion of the population commute to town for work. Some residents also keep livestock, about 15–20 cows each.

Ariga does not have a dispensary but the village is close to Ipamba hospital, a district-level government hospital, or the nearby Kalenga dispensary and the regional hospital in Iringa town. The village has two very active community health workers.

The village has good access to electricity as two out of three sub-villages have extensive electricity coverage. Access to safe drinking water is a problem; the village has limited water supply from the Tanangozi spring and most residents depend on Ruaha river, which is their main source of water supply.

There are one primary school and two secondary schools in the village.

**Isana** is located in the Luhota ward. The primary economic activity in Isana is agriculture, which is primarily rain fed. The main crops farmed are maize, beans, peas and sunflowers for subsistence and sale. Livestock-rearing and brick-making are other activities pursued by the participants. Only a few inhabitants work in the nearby town.

There is a government-run dispensary in the village, with nurses and two community health workers.

Only two of the nine sub-villages of Isana have access to electricity. Access to water is a serious problem in the village. Residents walk an hour each way to collect water or alternatively pay 500 Tanzanian shillings (£0.17) per bucket of water transported from town on small motorbike-style carts.

There are three primary schools in the village.

**Oloro** is located in the Mseke ward. There are ten sub-villages in Oloro. The main economic activities in the village include agriculture (maize, beans, onions, tomatoes, sunflower, sweet potatoes and Irish potatoes), small businesses (such as selling vegetables or running wholesale shops), livestock-rearing, and paid employment in brick-making.

Oloro does not have its own dispensary. There are two dispensaries in nearby villages that can be accessed by the residents. There are two volunteer community health workers in the village.

Oloro also faces problems of water access. There are 11 communal taps in the village, as well as some private taps, but water shortage is common.

There are two primary schools in the village.

## 3.2 Mufindi district

### 3.2.1 Villages in Mufindi

**Bolira** is located in the Mtwango ward. Bolira has five sub-villages, and the households in each sub-village are quite tightly clustered.

There are several large industries, mainly tea companies and timber, in and around the village, which employ many people from the village, including women. Some participants also practise subsistence farming or farm cash crops, although this is a secondary activity. The main crops cultivated are maize, pears, sorghum, wheat, cabbage and beans.

There is a government-run dispensary in the village and the closest hospital is the Lugoda mission hospital. Unilever has a private health facility, to which its staff have access and others can use at a cost. There are two community health workers in Bolira.

The village has good access to electricity as four of the five sub-villages are connected to the electricity grid. There are no major problems with water supply in the village.

There is a government-run primary school in the village.

**Esula** is located in Mtwango ward. Most residents are employed by tea companies, some are employed in the forest and some depend on their own tree plots. Those involved in cultivating food crops generally grow maize, wheat and Irish potatoes. There is also a small local milk cooperative run by women in the community. The women collect milk from individual farmers and sell it at a central place in the community.

There is no dispensary in the village. The closest health facilities are the Kibao government-run dispensary, Lugoda mission hospital and the Unilever company hospital, which is for staff but others can use at a cost, as well as the government-run district hospital. There are two community health workers in Esula.

There is good electricity access in the village as three of the four sub-villages are connected to the electricity grid. The village has reasonable access to water supply, although the springs are located at some distance from the village.

There is one government-run primary school in the village.

**Lomola** is located in Mtwango ward. The village consists of six sub-villages, which are compact but situated far from each other.

Tree ownership forms a large part of the Lomola village economy. Approximately 90 per cent of inhabitants own trees and around 2 per cent own private tea plantations. Some participants are employed in tea, timber and paper companies. In addition to their paid employment and tree

cultivation, participants in Lomola also grow small quantities of food crops for subsistence purposes and engage in small business.

The village has one government-run dispensary and other health facilities in the ward, including a private health centre owned by Unilever, which is mainly for workers on the tea plantations. The participants also use the district hospital in the district town. There are two community health workers in Lomola.

The village has good access to electricity as five of the six sub-villages have electricity coverage. The village also has good access to water supply and the residents depend on water from a protected spring.

The village has two government-run primary schools and a private secondary school.

## 4 Results

In the following sub-sections, thematic findings of the initial exploratory qualitative study analysis will be presented structured around the four key aims of the study (see section 2.1). Each sub-section will conclude with a discussion of the potential implications of the contextual findings on the uptake of the Wazazi Nipendeni plus mNutrition intervention in Tanzania.

### 4.1 Access to, use of and attitudes towards mobile phones

#### 4.1.1 Access to mobile phones

Access to mobile phones was relatively good in all six communities. This observation echoes the finding of the desk-based literature review conducted by the IDS qualitative team during the preparatory phase, which suggested that around 38 per cent of the rural adult population owns a mobile phone.<sup>6</sup> The majority of participants owned simple mobile phones ('dumb phones') with limited functionality. Smartphones were uncommon in all six villages.

Most participants said that men were more likely to own a mobile phone than women. Several participants independently estimated that seven out of ten men owned a mobile phone, whereas only three out of ten women did. The perceived reasons for the gender differences in mobile phone ownership were that many rural women depended on their husbands to buy them a mobile phone and a perceived greater need for a phone for men's work-related activities, as the two quotes below highlight:

*Because men are the head of the household... you may find that men are the ones owning phones more than women because they are the ones who work harder to get money for the family at home. (Father, FGD, Oloro)*

*It is because men want to phone to communicate about work. For example, for those who are making bricks they want to communicate with their customers who are buying bricks. (Mother, FGD, Ariga)*

Some men feared the opportunities and freedom that a mobile phone would offer to their wives, mainly with regards to communicating with other men, and thus restricted ownership, as they saw mobile phones as a threat. Young married women in particular often did not own or have access to a mobile phone, as a mother from Iringa rural explained:

*Some of them don't like their wives owning mobile phones because you might get your wife a phone and when you call she doesn't pick up or maybe the phone isn't reachable. What you do is when you get home you take that phone away from her. That is why women don't own more phones than men. (Father, FGD, Ariga)*

*Very few young married women have phones because most husbands think that you will be communicating with other men. The husband may tell you, 'Why do you want the phone while I'm here?' (Mother, FGD, Ariga)*

Similarly, in Mufindi a pregnant woman in Lomola described her experience:

*It [owning a mobile phone] will cause misunderstanding in the family. I remember before marriage I had a phone but after I get married I don't have one, because of lack of trust [of*

<sup>6</sup> See also Barnett and Srivastava (2017)

*my husband]. My husband thinks that if I have phone I will have a relationship with other men. (Pregnant woman, FGD, Lomola)*

*You can find that in a certain household a husband just bought a phone for his wife and finds out the phone is the source of problems in the family, by resulting in behaviour that is not good, so he decides to take the phone away from his wife. (Father, FGD, Lomola)*

While fewer women than men owned a mobile phone, many women could gain access to the phone of their husbands or neighbours if needed (e.g. to make emergency calls). The practice of occasional mobile phone-sharing between spouses was common among some couples; for example, if a household could not afford two phones or one spouses' phone ran out of credit. While some couples shared the mobile phone including the SIM card, others just shared the handset and each spouse had his or her own SIM card(s).

However, most participants perceived mobile phones as an individual device only to be shared with their partner (or other people) in emergencies. The most common reason for this was the belief that mobile phones could contain 'secrets' (mainly related to extramarital relationships) that could cause marital tension or conflict if revealed, as one pregnant woman noted:

*I don't know why [people are reluctant to share mobile phones] but I think may be because everyone has personal issues, like secrets, so they don't like to share phones between them, so when the phone rings a mother calls her husband to come and pick up his phone. (Chairman, IDI, Lomola)*

*It [sharing my husbands' mobile phone] will create a misunderstanding because he may have relations with other woman and they may communicate with each other using messages, which I may come across and then we start arguing. (Pregnant woman, FGD, Oloro)*

Some women did not own a mobile phone handset, but owned a SIM card that they used in the handsets of family members or friends. Using their own SIM card, rather than relying on someone else's handset and SIM card, provided them with some privacy and control even without a handset.

Young men and unmarried women were generally more likely to own a mobile phone, mainly because they earned money (e.g. from working on tea plantations) to buy a phone. However, some community members opposed the idea that young women should have access to a phone, as this could promote immoral behaviour:

*More young girls own phones and it is something personal. You may find a young girl with six partners at a time. So, you cannot communicate secretly to everyone so, you have to use phone to ensure everyone has his own time. (Mother, FGD, Ariga)*

The same concern was not voiced with regards to young men; however, some community members feared that young men would be distracted from their studies when owning a mobile phone.

#### **4.1.2 Use of mobile phones**

Mobile phones were mainly used for communication purposes and for financial transactions (i.e. sending and receiving money via M-Pesa, Tigo Pesa or Airtel Money). Calls were made for social interactions (e.g. to stay in touch with friends and relative in other villages or towns), for work-related purposes (e.g. business negotiations, to contact colleagues or to engage with customers)

and in emergencies (e.g. if a child was ill or somebody got injured). Calls were generally preferred to other forms of mobile phone-based communication, as they allowed immediate communication and accommodated the urgent nature of communication better.

SMS text messages were also popular among both men and women. Sending a text message was considered a more economical form of communication as it was cheaper than making a phone call. A kiosk owner explained:

*People like calls but since they cannot afford to top up credits they like SMS, which is a cheap way of communicating.* (Kiosk owner, IDI, Bolira)

Some participants also liked SMS messaging, as it helped them to save time, compared to a phone call, and allowed a private conversation in public, without risk of being overheard.

### **4.1.3 Attitudes towards mobile phones and mobile network operators**

#### **4.1.3.1 Attitudes towards mobile phones**

Men and women in the six villages were generally positive about the benefits that mobile phones had brought to their lives and their communities, although there were some differences between genders. Women especially appreciated that mobile phones provided them the freedom and flexibility to communicate with relatives and their birth families who lived far away. In this context women described how they regularly sent 'greetings' to distant relatives and how the mobile phone helps them to save money, time and effort as they did not have to travel to see their relatives. Furthermore, women's mobility to travel was frequently limited, due to their commitments to their farms and household chores. Calls to relatives were not just for social purposes but also to make practical requests (e.g. asking for things to be sent) and access information.

Women also appreciated mobile phones as they provided security in emergencies (e.g. accidents on the farm, seriously ill child). This was perceived as particularly important when the woman was alone in the house and the man was out for work, especially overnight and for several days. One woman explained:

*The first thing to do when I have health emergency is to call the taxi driver to rush me to the hospital.* (Pregnant woman, FGD, Isana)

Men valued phones mainly for work-related communication, in particular to speak to customers, arrange products and goods and look for new work opportunities. A casual brick worker described:

*To be honest, phones help us a lot in doing different businesses and in our village. We depend mostly on brick-making for generating income and without it [a mobile phone] you cannot do that work and even if you can do it then you must look for a person with a mobile phone in order to look for customers.* (Father, FGD, Ariga)

Participants (mainly men) also repeatedly praised the use of mobile phones for financial transactions and to help them to save money:

*My phone helps me a lot with how to get money, save money and communicate. So instead of keeping the money with me in my pocket I decide to put it on my phone because I might lose it or have it stolen.* (Father, FGD, Oloro)

While attitudes towards mobile phones were generally positive, men's attitudes towards their wives' use of mobile phones varied. Some men encouraged and aided their wives' access to and use of a mobile phone, as this could help in the coordination of chores between them and facilitated communication when the husband worked away from home. As one man from Ariga said:

*It is OK [if my wife owns a mobile phone] because I might have left home for work and leaving some of the things unsorted at home, it will become difficult for me to go back home and start to sort those things, so the phone makes it easier for me to make communication with my wife and sort that out. On the other hand, we are entrepreneurs, so sometimes there might be a certain job somewhere and I can't get home by that time so I will have to inform my wife through the phone that I will not be able to come back until the next day. (Father, FGD, Oloro)*

However, in all villages at least some of the men were concerned about the freedom mobile phones gave to their wives and daughters. They were mainly worried that women would use the phone to meet other men or 'to call their lover'. As a consequence, several men restricted their wives' access to a mobile phone, even if they wanted the mobile phone to engage in legitimate communication (e.g. to talk to a relative). Similarly, several women were aware that their husbands used their mobile phones to engage in extra-marital relationships.

In the opinion of most men, women used mobile phones mainly 'to greet people and have a chat', whereas men said that they depended on mobile phones for work-related purposes.

#### **4.1.3.2 Attitudes towards mobile network operators**

Participants' attitude towards MNOs was predominately neutral. A few participants complained about the high service charges for mobile phone-based financial transactions. Vodacom and Tigo were the most commonly used networks among the participants in Iringa Rural and Mufindi districts. In Mufindi, Halotel – a new network that is gaining popularity quickly due to good network coverage and speed – and Airtel were also popular with some participants.

Participants highlighted different factors that influenced their choice of a particular MNO. Network coverage and costs and features of the pay-as-you-go bundle offered by different network operators, with regards to allowances of calls and text messages, were described as the determining factors when choosing a network operator. A mother from Esula summarised:

*Voda has good and cheap packages and the network coverage is good; for example, if you have 500 shillings you get 50 minutes' airtime and SMS for 24 hours. I don't remember how many SMS but as a housewife you cannot finish them all (Mother, IDI, Esula)*

Promotions and bonuses offered by the MNOs could also influence decision-making regarding choice of network.

#### **4.1.4 Potential implications for uptake of the mNutrition intervention**

Table 4.1 presents the key findings on access to, use of and attitudes towards mobile phone technology among male and female participants in the two study regions and draws conclusions on the potential implications for the uptake of the Wazazi Nipendeni plus mNutrition intervention. The third column presents recommendations for the programme design and far right column concerns

aspects to follow up on in subsequent qualitative data collection rounds (i.e. the qualitative midline study and the qualitative follow-up at the endline stage).

**Table 4.1: Qualitative key findings on access to, use of and attitudes towards and acceptability of mobile phones in the six qualitative study communities**

Key findings		Potential implications for the uptake of the Wazazi Nipendeni plus mNutrition intervention	Recommendation for the improvement of Wazazi Nipendeni plus mNutrition programme	Aspects to follow up on in subsequent qualitative data collection
Access to mobile phones	There is a gendered dimension in access to and ownership of mobile phones. Women are less likely to own a mobile phone due to limited access to or control over economic resources to purchase a phone or husbands' restrictions on ownership	Reaching some of the vulnerable mothers and pregnant women could be challenging, due to exclusion from mobile phone ownership	To reach as many women as possible, promotion campaigns should not only target women but also men, who often control women's' access to mobile phones	Explore potential intra-household dynamics women have to navigate to gain access to the messages
	Young unmarried and married women are often excluded from owning a mobile phone due to concerns about immoral behaviour	Reaching young pregnant women might pose a challenge as their access to and ownership of mobile phones is often restricted	To reach young pregnant women (married and unmarried), promotion campaigns should not only target women but also young men and potentially household heads	Explore potential intra-household dynamics young (married and unmarried) women have to navigate to gain access to the messages
	Mobile phone-sharing between spouses is relatively uncommon, except in emergencies, as mobile phones are seen as individual devices and keepers of secrets	Nutrition messages sent to another household member may not reach the intended beneficiary or may be communicated late	Promote the benefits of Wazazi Nipendeni plus mNutrition messages to the entire household, not just women	Understand whether nutrition messages are shared by the mobile phone owner (With whom? Why? Why not? How?)
Use of mobile phones	Mobile phones are mainly used to make and receive voice calls and send and receive SMS text messages	Most women seem familiar and comfortable with receiving SMS text messages, consequently the uptake of Wazazi Nipendeni plus mNutrition messages may be good	The programme could consider adding a voice-based component or a call centre, given women's preference for calls	Explore barriers to and facilitators of the uptake of the messages
Attitude towards mobile phones	Men valued mobile phones for work-related purposes and financial transactions	Men may be less receptive to Wazazi Nipendeni plus mNutrition messages as they perceive their mobile phones mainly as a work-related devices	Promotion of the benefits of the Wazazi Nipendeni plus mNutrition intervention to men needs to consider how and for what men usually use their phones and provide incentives that could improve	Explore whether and how men's attitudes towards mobile phones influence uptake of the messages in treatment areas

Key findings		Potential implications for the uptake of the Wazazi Nipendeni plus mNutrition intervention	Recommendation for the improvement of Wazazi Nipendeni plus mNutrition programme	Aspects to follow up on in subsequent qualitative data collection
			perception of the intervention among men (e.g. information targeted at men's health)	
	Men's attitudes towards their wives' use of mobile phones varies – some men actively encourage use, while others restrict access	Access to and uptake of Wazazi Nipendeni plus mNutrition messages may be negatively affected if a husband decides to restrict access to a mobile phone	Promote the benefits of Wazazi Nipendeni plus mNutrition messages to the entire household, not just women. Leverage the influence of village leaders for this promotion	Explore whether men had an influence on women's access to the messages (How? When? For how long?)
Factors that influence the choice of mobile phone operator	Network coverage and costs and features of pay-as-you-go bundles determine network operator choice	As Wazazi Nipendeni plus mNutrition is offered independent from network operators, no influence on uptake is expected  (However, this might change if one of the operators decides to promote Wazazi heavily or withdraw from the service)	–	Explore the potential influence of network operators on the uptake of Wazazi Nipendeni plus mNutrition messages

## 4.2 Potential barriers to and facilitators of the uptake of mobile phone-based messages

In this section, potential barriers to and facilitators of the uptake of mobile phone-based mNutrition messages are explored both from a technology perspective (i.e. factors related to the mobile phone) and the women's perspective (e.g. perceived self-efficacy when using a mobile phone, perceived usefulness of mobile phone-based services).

### 4.2.1 Barriers and facilitators from a technological perspective

#### 4.2.1.1 Good network coverage, with some minor variations

Overall, network coverage was described as good in all six villages. Vodacom Tigo and Halotel were perceived as the most reliable networks with regards to network strength.

While network coverage was available everywhere in Iringa Rural, participants in Mufindi complained about network coverage holes on tea plantations and in valleys surrounding the villages. For example:

*When we are down the hill in the tea plantations the network coverage is very poor.*  
(Mother, FGD, Bolira)

Another challenge for some households in both Iringa Rural and Mufindi was network coverage indoors. While it was almost always possible to receive SMS text messages in the house, although sometimes with a delay, making and receiving calls could be difficult.<sup>7</sup> For example, several participants explained that they had to leave their house to make a telephone call.

While network coverage was generally good, the strength of different networks varied by location. For example, Vodacom could provide a strong and reliable network in some villages, but was less strong in the valleys.

#### 4.2.1.2 Access to electricity to charge mobile phones could pose a challenge

Access to electricity to charge mobile phones posed a challenge to participants in Iringa Rural where most houses were not connected to the national electricity grid. This was less of a problem in Mufindi, although some households here also did not have electricity connections. Most participants without access to electricity used mobile phone kiosks in nearby villages or towns to charge their phone for a fee of 300 Tanzanian shillings (£0.10). Normally people would charge their phones twice a week but in households where both men and women owned phones, charging the man's phone was priority. Apart from the (small) cost, charging the phone at a kiosk was inconvenient, especially if the nearest kiosk was outside the village, and posed a challenge for many busy rural women. Women often lacked mobility, due to other commitments in and around the house and social norms, and struggled to find the time to go and charge their phones. As a consequence, phones that had run out of power often remained switched off for a few days. A mother from Ariga noted:

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<sup>7</sup> The bandwidth needed to send and receive text messages is smaller than that required for calls. Therefore, it is often possible to receive text messages in areas of poor network coverage but not calls, which need considerably more data.

*It [charging the mobile phone] is a problem, because the place we charge phones is located far away from home. If the battery is out of charge today we can stay for two days before charging. We normally walk half an hour to get to the place where we charge our phone. (Mother, IDI, Ariga)*

A few participants in Iringa Rural had access to small stand-alone solar panels that they used to charge their phones. However, given the costs of panels only few households owned one. There was also the widespread perception that mobile phone batteries charged with solar energy would not last as long as batteries charged with electricity from the national grid, as the chairman from Oloro pointed out:

*Some people are using solar power to charge their phones but it is not good as it shortens the life span of the battery. Charging using electricity [from the national grid] is quite different from solar power. The battery will not last as long when using solar power. When they [participants] experience such problems, they come here to charge their phone using grid electricity. (Chairman, IDI, Oloro)*

#### **4.2.1.3 Misconception that mobile phones can attract lightning**

There was the belief that mobile phones could attract lightning during thunderstorms and that it was therefore dangerous to use phones in stormy weather conditions. Many participants switched off their phones during heavy rains and in particular during lightning storms, as a mother from Esula described:

*During rainfall, we are afraid to communicate with other people because of rays from thunder storm and phones, if they collide it causes electric shocks that may lead to death. So, we have to switch off the phone until evening when the thunder storm is weak. Sometimes it will rain for a month but during the evening we communicate with other people. (Mother, FGD, Esula)*

The unfounded myth that using a mobile phone during a thunderstorm is risky is widespread in Southern and East Africa and has been reported previously (Tregrove and Jandrell 2015). However, it is a misconception, as the electromagnetic waves transmitted to and from a mobile phone do not cause ionisation of the surrounding air and thus do not create a preferential path for lightning (Althaus 2006).

#### **4.2.1.4 Economic and logistical barriers to access to mobile phone credit**

The purchase of mobile phone credit was a challenge for some participants, in particular women and participants in Iringa Rural, due to economic and logistical reasons. Several mothers described how they often struggled to find the budget to pay for mobile phone credit and as a result often had periods without credit on their phones. Some network operators (e.g. Vodacom) gave customers the choice to borrow credit and pay for it later, whereas others did not provide this option.

In Ariga, some participants had to travel to the next village to purchase mobile phone credit, which posed a challenge for some women, as explained in the following quote:

*Getting credit vouchers is a problem because it is quite a distance to the place we get them. (Mother, IDI, Ariga)*

Based on key informant interviews with MNOs, we know that participants can still receive telephone calls and messages if they run out of call credit. But subscriptions to mobile phone-based packages (e.g. Vodacom, Tigo) will be automatically deactivated if credit is not topped-up within two weeks once it had ran out. As the Wazazi Nipendeni service plus nutrition is offered free of charge, the service would continue even if a mobile phone ran out of credit. However, if credit is not bought within a period of 90–180 days (depending on the network operator) after expiry, the SIM card will be deactivated automatically by the network operator. Similarly, if a phone remains switched off for the same length of time the SIM card will be deactivated.

Some participants also highlighted that they were reluctant to subscribe to any mobile phone-based service as they feared the subscription would reduce their calling credit. This might pose a barrier to initial sign-up to Wazazi Nipendeni plus mNutrition. (However, in the quantitative treatment sites this is unlikely to be a problem as households were signed up directly).

#### **4.2.1.5 Hardware issues are rare and mobile phone repairs available**

Hardware issues with the mobile phone were seldom reported. If they encountered a technical issue that could not be addressed by a family or community member, participants would bring the phone to the repairer in the next village or town the next time they were there for other errands:

*We take it [the broken phone] to the next village to fix it. It is the next village, which you passed through, but it is a bit far. It is about four kilometres from here. (Mother, IDI, Bolira)*

Many participants said that they often had no time or money for immediate repairs and that a broken phone could mean that they were without a functioning phone for several days or even weeks.

A few participants said that they owned counterfeit or 'fake' mobile phones that were deactivated after the nationwide ban of counterfeit mobile phones launched by the government in June 2016, as also highlighted in the previous literature review conducted by the evaluation team.<sup>8</sup> As they had no money to purchase a new phone, many of them still had no access to a phone.

As many participants had used their phones for several years already, several of them experienced a gradual decline in the phone's battery life and had to recharge the battery more frequently, which could pose considerable challenges in the villages without electricity. Many tried to address this problem by buying inexpensive counterfeit batteries. However, these usually had a short life span and were the cause of much frustration, as explained by the chairman of Oloro:

*Let me talk about the issue of batteries. The people who are selling phones... you don't know, or you're not certain, whether the phone you are buying has an original battery. And you'll see those who are selling batteries elsewhere, people walking in the street, saying 'original for 15,000', and then he sells you a fake battery. So, you buy a battery for a high price, you charge it today and within 12 hours it's already finished. So, this disturbance around batteries exists (Chairman, IDI, Oloro)*

#### **4.2.1.6 Multiple SIM card behaviour is common**

Most participants, including women, owned and used SIM cards from at least two different network operators in parallel. This allowed them to switch between networks flexibly, depending on the best

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<sup>8</sup> See also Barnett and Srivastava (2017).

network coverage for each location. The credit for the different SIM cards only had to be topped up once it ran out. As long as there was sufficient credit on the phone, subscriptions to mobile phone packages would be renewed automatically drawing on the existing credit.

Network tariffs also changed frequently and many people constantly changed between SIM cards to capture the best tariff. For example:

*I dislike it when the network is experiencing disturbances, because I hate it when I go to another place then that particular mobile network is not working. This is because the network here will not necessarily be available in all the places that you will be going. This is why I have SIMs from different companies. (Father, FGD, Oloro)*

*Mainly it's a network thing. For example, in this area if you use Voda, there are places you get Voda and places you can't get Voda, so you see which it is that makes it easier for you to communicate. So, when you have Halotel, there's always network. You sometimes find people that have more than one line because of these basic reasons. If you're in one area it's easier to communicate because [a] network is available, and when you're in a particular place it's not easy to communicate because there's no network. So, owning two lines is mainly a network thing. (Chairman, IDI, Oloro)*

Another reason for owning multiple SIM cards was to utilise the cheapest calling tariffs depending on time of the day (e.g. one operator may offer cheap calls during the day, while another offers cheap calls during the night) and the network of the person they wanted to reach. Calls within the same network were considerably cheaper than across networks, as highlighted in the following quote:

*For instance, I have two SIM cards, that is Airtel and Vodacom, because my phone can't support three SIM cards and some of them like to talk to you using Tigo line and some Vodacom to Vodacom, so they can get me at any line but all in all it is cheaper to call the same network as in Airtel for Airtel compared to if you call someone with Airtel to another network (Father, FGD, Oloro)*

Dual SIM card phones (i.e. phones with slots for two SIM cards) were not very common, but allowed participants who owned them to manage and switch between different active SIM cards easily and without missing communication sent through any of the cards. However, most participants had one-slot phones and had to manually exchange cards depending on their needs and might miss messages or calls as a consequence. There was also the frequently repeated worry that one could lose the SIM card that was not in use.

#### **4.2.1.7 Mobile spam**

The extent of mobile spam – meaning unsolicited text messages, especially advertising – depended on the network operator. While a few of these unsolicited messages were perceived as informative by some villages (e.g. messages with national or sport news, details on birth registration), the majority of spam messages were considered a disturbance.

Participants complained that messages were not informative, wanted them to subscribe to unwanted, chargeable services, and were repetitive, distracting them from more important tasks:

*Some of the mobile networks are chaos because they send the same messages frequently, which is a disturbance to people because they leave what they are doing and start reading the messages. (Chairman, IDI, Lomola)*

There were also numerous messages enticing participants to call a specific number to win money or gain free minutes on their phones. Several participants explained that they had acted on the messages, but soon realised that the information was not truthful, as the following quotes highlights:

*To me those messages are useless because they are saying 'get 15 minutes for free' and if I try to call someone they say you have insufficient credit to call. So, I don't understand them and if I get those messages I delete them. Why do they send us this message while they are lying to us? If it could be true we could trust information but they are lying to us and still they send the messages. (Mother, FGD, Bolira)*

Most spam messages were read before they were deleted, although some participants described that they had started to automatically delete messages from specific numbers as they knew that this would be promotional messages of no importance for them. In this context, the number or name of sender of a message was mentioned as important for a villager's decision whether to read a message or delete it automatically.

Mobile spam could negatively interfere with the uptake of Wazazi Nipendeni plus mNutrition messages, if women miss or disregard messages or message notifications, believing the message to be spam. Mobile spam might also fill up women's inboxes making it impossible to receive new messages.

## **4.2.2 Barriers and facilitators from the women's perspective**

### **4.2.2.1 Perceived self-efficacy in using mobile phones**

Self-efficacy in using mobile phones has been shown to be an important determinant for the perceived ease of use and ultimately adoption of new mobile phone-based services (Venkatesh 2000; Islam, Khan *et al.* 2011).

Most of the women interviewed said that they were comfortable and familiar with using mobile phones to make calls and to receive and read SMS messages. A few women did not know how to send messages, but still knew how to receive them.

Apart from these two functions, most women were uncomfortable and inexperienced with using other functions of the phone. As a mother from Bolira said:

*I cannot explain more about that [different functions of the phone] because the phone has so many functions that I'm not familiar with. (Mother, FGD, Bolira)*

Most women said that they would be comfortable with text messages to receive information as they were used to text messages and also liked the privacy a text message would provide, in contrast to a voice call that could be overheard. Only a few women pointed out that they would prefer voice messages as they were unable to read or their reading skills were poor.

### **4.2.2.2 High level of literacy and preference for local language**

Literacy levels in all six villages seemed to be very high, with only very few women and elderly community members reporting that they did not know how to read. This observation is very much

in line with the findings of the IDS desk review, which suggests that nearly 80 per cent of the Tanzanian population is able to read (World Bank 2016).<sup>9</sup>

With regards to language, the majority of women said that they would prefer information messages in Swahili as their understanding of English was limited.

#### **4.2.2.3 Gendered norms restrict access for women**

Tanzania is a patriarchal society where men dominate most areas of life. This also has an impact on women's access to and use of mobile phones. In all six villages women reported that some husbands restricted how, when and for what they could use a mobile phone. This was particularly the case when the women shared their husbands' phones, but also when the husbands had bought mobile phones for their wives. A few husbands would also control who their wives were allowed to call or wanted their wives to make calls in their presence only, which allowed them to monitor their wives' conversations.

In a few instances women said that their husbands had requested their wives return the phones they had bought for them, as the husbands suspected that the women were using the phones to contact other men.

#### **4.2.2.4 Perceived usefulness of mobile phone-based messages on nutrition**

Perceived usefulness, or in this case the belief of the intended user that the mobile phone-based service will facilitate improved dietary practices, has frequently been highlighted as a key determinant for uptake and sustained use of new technologies (Venkatesh and Davis 2000; López-Nicolás, Molina-Castillo *et al.* 2008; Venkatesh and Bala 2008).

#### **Mothers and pregnant women**

When asked whether they would find SMS text messages on child nutrition and nutrition during pregnancy useful, the majority of women said that they would. A few of them recalled that they had previously received text messages on health-related issues (e.g. a one-time message on birth registration from the government, several messages about health during pregnancy or general health issues) and that they found these messages very informative and helpful.

Women perceived nutrition messages as useful for various reasons. Some felt that such information was lacking in their community and access to dispensaries (i.e. primary health care facilities) to get information was often difficult due to limited time and distance. Mobile phone-based messages would therefore be a convenient and inexpensive way to receive information:

*It is difficult to get information on nutrition here because I have not seen any meeting[s] that discuss nutrition issues or maybe once in a while there is a village meeting where some nurse, doctor and other professional personnel come to educate us on nutrition. But there is a shortage of health workers so it is not often.* (Pregnant woman, FGD, Oloro)

Others said they would like SMS-based nutrition information as they would get the information 'directly', 'immediately' and 'at a time when they needed it' rather than having to waiting for a village meeting or a community health worker who talked about nutrition. In this context, several

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<sup>9</sup> *Ibid.*

women also believed that information sent directly to their phone would be more targeted to their specific needs, rather than broad, general information they could get during village meetings.

A few women also liked the fact that they could repeatedly read text messages they found useful and important, and also show the messages to colleagues or friends who might be interested in them, as a pregnant woman from Oloro noted:

*It is easy through mobile phones because you can share nutrition information with your [female] colleagues compared to radio where you may not listen to the radio properly or hear things incompletely.* (Pregnant woman, FGD, Oloro)

A few women also liked the privacy a text message could provide as there was no risk of being overheard (as could be the case in a health facility or with a voice call). One could read the message when alone, at a convenient time.

### **Health workers**

Some health workers believed that text messages on nutrition and child health would facilitate their work as the messages would reiterate information they had given to mothers previously. They believed that mothers were more likely to believe and trust the information when they heard the same messages repeatedly and from different sources:

*If I tell them about certain nutrition or health issue and then they get the same information from the radio or through SMS obviously, they will value it and take it into consideration* (Health worker, IDI, Isana)

In fact, women in all six villages highlighted that they were more likely to trust and follow information when it repeated information they had previously had from a health worker.

A few health workers felt that they lacked education on nutrition as most of their training had only been on health issues and behaviours related to WASH (water, sanitation and hygiene). Therefore, they often did not feel in a position to provide detailed advice on nutrition to mothers or answer specific questions. Mobile phone-based messages could potentially help them to improve their own knowledge easily and without going to a training.

### **Husbands**

While husbands were generally supportive of receiving text messages on nutrition and child health, perceptions about the potential usefulness of these messages to them varied.

Some men believed that messages on child nutrition and nutrition during pregnancy would be useful for both husbands and wives, especially when the messages were sent to both in parallel. Receiving the same message would increase couples' trust in the messages and also enable them to discuss the content together:

*Yes, because if we all get the messages it will be easier to discuss matters pertaining to the health and nutrition of our babies. I think if we all receive these messages it will be good.* (Father, FGD, Lomola)

*I think these messages should come to my phone and my wife's phone in order for them to trust them.* (Father, FGD, Oloro)

Other men liked the idea of text messages on nutrition and health, but stressed that they preferred messages that also helped them to improve their own health and wellbeing in addition to providing information on child and women's health and nutrition.

A few men believed that the text messages were predominantly important for mothers who were responsible for childcare and child-rearing, but less meaningful to them. Sending the messages straight to the mother, rather than to them, would also avoid misinterpretation of the content, as a father from Oloro explained:

*I think it will be better if the message goes straight to the mother herself because if it comes to me then it will be difficult to explain what the message is saying. (Father, FGD, Oloro)*

*Another thing is men's perception of pregnancy they see it as a women's issue and they normally say, 'You are the one who is pregnant. I have to go to work' (National expert, IDI, Dar-es-Salam)*

### **Women's perceptions about the usefulness of nutrition messages for their husbands**

Women generally liked the idea that their husbands would receive messages on child nutrition and nutrition during pregnancy. They believed that the messages could increase men's interest in the topic and also induce a feeling of responsibility for the health and nutritional status of their children:

*Husbands will take responsibility to ensure the child is getting important requirements in nutrition. (Woman 2, Mother, FGD, Esula)*

*Husbands will understand and gain knowledge on nutrition and it will help them to buy nutritious foods for the children. (Woman 2, Mother, FGD, Esula)*

In this context, several women highlighted that they liked the fact that messages would arrive repeatedly, which would make it difficult for their husbands to ignore them. As a mother described in the following quote:

*So, when they [the nutrition text messages] keep on knocking it will reach a time that he feels disturbed and opens the door. So, if they send messages every day they [the husbands] will eventually understand that what is being said is important. (Mother, FGD, Ariga)*

Despite the dominant belief that nutrition messages for husbands would be useful, several women doubted that their husbands would be interested and engage with such messages:

*If your husband is understanding he would see the importance of automated SMSs but there are some men drinking local beer who have no time to look at the phone or even his wife until the following morning, to see if there is a work somewhere that's all. It's very rare for men like this to read the SMSs related to pregnancy and follow the advice. Some men when coming from work they just ask for water for bathing, food to eat and then they go to drink local beer at the pub. They have no time with their partners, so it will be very difficult talk about nutrition messages. (Pregnant woman, FGD, Oloro)*

### **Interpersonal interaction could improve the usefulness of messages**

Women (mothers and pregnant women, elderly women), health workers and national experts all stressed that the uptake of messages would be more effective if messages were combined with an

interactive component. Several women said that they would appreciate receiving the number of a helpline with the text messages. For example, if they had more specific questions they could ask the helpline. Discussing the content of messages with other female friends or husbands was also perceived as increasing the usefulness of the messages.

Health workers and national nutrition experts emphasised the importance of interactive support for the women to enable them to follow the messages:

*Text messages on nutrition are good, mothers get the information but they need support to follow the information or how to put the message into practice. And here the role of the CHW [community health worker], health facility and also the community is very important. The mobile messaging programme has to work in complementarity with the efforts of the CHWs and the health care staff because if they reiterate this information, women are going to trust it. All types of channels should be used- media, health facility, community support, etc. (National nutrition expert, IDI, Dar-es-Salam)*

The importance of interaction for effective health behaviour change communication has been highlighted repeatedly (Glanz, Rimer et al. 2008; Briscoe and Aboud 2012).<sup>10</sup> Mobile phone technology and other communication technologies have been shown to have the potential to facilitate an interactive communication process even in remote villages (Glanz et al. 2008, Free, Phillips et al. 2013).

#### **4.2.3 Potential implications for the uptake of the Wazazi Nipendeni plus mNutrition intervention**

Table 4.2 shows the key findings on the potential barriers to and facilitators of the uptake of the mNutrition intervention. The last two columns present recommendations for the Wazazi Nipendeni plus mNutrition programme design and aspects to follow up in subsequent qualitative data collection rounds (i.e. the qualitative midline study and the qualitative follow-up at the endline phase).

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<sup>10</sup> See also Barnett, Scott, Batchelor and Haddad (2016)

**Table 4.2: Qualitative key findings on barriers to and facilitators of the uptake of the Wazazi Nipendeni plus mNutrition intervention in the six qualitative study communities**

Key findings		Potential implications for the uptake of the Wazazi Nipendeni plus mNutrition intervention	Recommendations for the improvement of the Wazazi Nipendeni plus mNutrition intervention	Aspects to follow up in subsequent qualitative data collection
Barriers and facilitators from a technical perspective	Access to electricity poses a problem (especially in Iringa Rural) due to lack of electricity in homes, lack of time and limited mobility of women to charge the phone at a mobile kiosk	Wazazi Nipendeni plus mNutrition messages may be missed if the mobile phone runs out of battery and cannot be recharged within the next 48 hours (messages are stored on the MNOs server for 48 hours only and then disposed of)	–	Explore the potential impact of the lack of electricity on the reception of and experience of the messages
	Purchase of mobile phone credit can pose an economic challenge and/or logistical challenges for poor rural women	As the Wazazi Nipendeni plus mNutrition messages are free-of-charge, reception of the messages will not be affected when mobile credit runs out. However, if the credit is not topped up within a specific time period (which varies by network operator) the SIM card might be deactivated and Wazazi service stops	–	Explore the frequency with which pregnant women and mothers run out of credit and how this affects their participation in and experience of the messages
	Fear that subscription to any mobile phone-based service could reduce their calling credit	While the Wazazi Nipendeni plus mNutrition messages are free of charge, some women might be reluctant to subscribe out of fear that they will still be charged	The promotion of the messages should stress that the service is free of charge and supported by the government	Explore whether subscribers still fear potential direct (or hidden) charges using the service
	Short life spans of batteries and low-quality counterfeit batteries pose a problem, especially to households without an electricity connection	Women may miss Wazazi Nipendeni plus mNutrition messages if their phone runs out of power and is not recharged within 48 hours	–	Explore the potential impact of the lack of electricity on the reception and experience of the messages
	Multi-SIM card use is common (among both men and women) and allows participants to use	If SIM cards are exchanged manually, Wazazi Nipendeni plus mNutrition messages might be	–	Explore whether the multi-SIM card behaviour has an impact on the reception and experience of the messages

Key findings		Potential implications for the uptake of the Wazazi Nipendeni plus mNutrition intervention	Recommendations for the improvement of the Wazazi Nipendeni plus mNutrition intervention	Aspects to follow up in subsequent qualitative data collection
	the best tariffs and network coverage	missed during the times a different SIM card is in use  If different SIM cards are used in parallel using a dual SIM card phone, the likelihood that messages are missed is reduced		
	Mobile spam messages are common, but most messages are read before deletion	Women might mistakenly treat Wazazi Nipendeni plus mNutrition messages or notification of messages as spam and delete them without reading  Women's inboxes might be filled up by spam messages and thus reception of new Wazazi Nipendeni plus mNutrition messages will be impossible	–	Explore the impact of spam messages on the uptake of Wazazi Nipendeni plus mNutrition messages
Barriers and facilitators from the women's perspective	Voice messages are the preferred channel for information for illiterate women	Women who are illiterate or have poor reading skills might be unable to take up the Wazazi Nipendeni plus mNutrition messages	–	Explore illiterate women's experiences with and perceptions of the messages (What strategies did they use to get access to the messages?)
	Some husbands control and monitor their wives access to and use of mobile phones	Uptake of Wazazi Nipendeni plus mNutrition messages might be negatively affected, especially if husbands decide to withhold access completely	To ensure better support for the uptake of the messages, men should be included in the target group for promotion activities	Explore whether women's access to the messages was affected by their husbands control over access
	Women believe that mobile phone-based messages would be useful as they address existing gaps in nutrition information, can help to save time and to budget for travelling to the health	Wazazi Nipendeni plus mNutrition messages may be well-received by women	To ensure good uptake, promotion campaigns should highlight the potential multiple benefits of the messages	Explore the perceived usefulness of Wazazi Nipendeni plus mNutrition services after roll-out

Key findings		Potential implications for the uptake of the Wazazi Nipendeni plus mNutrition intervention	Recommendations for the improvement of the Wazazi Nipendeni plus mNutrition intervention	Aspects to follow up in subsequent qualitative data collection
	facility, serve as refresher for existing information			
	Health workers believe that mobile phone-based messages would be useful as they would repeat information provided by the health workers and thus strengthen trustworthiness and likelihood of uptake	Wazazi Nipendeni plus mNutrition messages may get health workers' approval, which might improve uptake and trust among women	To encourage uptake the programme should ensure that the messages are in line with information provided by the primary health care system	Explore the perceived usefulness of Wazazi Nipendeni plus mNutrition services after roll-out and whether women perceive the messages to be in accordance with what they learned from other sources (Why/why not? How did this affect uptake and trust in the messages?)
	Health workers felt that messages could help them to address their own knowledge gaps in nutrition and become better nutrition advisers	Wazazi Nipendeni plus mNutrition messages are likely to be well received by health workers with potential positive spill-over effects on the entire community	Potentially consider Wazazi Nipendeni plus mNutrition messages specifically targeted at health workers	Explore health workers' experience of the messages
Perceived usefulness of nutrition messages (men's perspective)	Husbands have mixed opinions about the potential usefulness of mobile phone-based nutrition messages. Some are eager to learn more about nutrition to support their children and wives, whereas others are less interested and believe nutrition to be the woman's responsibility	Uptake of Wazazi Nipendeni plus mNutrition messages among men is likely to vary and so will engagement with content	To ensure better support for the uptake of the messages, men should be included in the target group for promotion activities	Explore men's experience of and response to the messages
	Some men highlight that they would be more interested in potential mobile phone-based nutrition messages if the messages also include	Some men might lose interest in the Wazazi Nipendeni plus mNutrition messages once they realise that the messages only concern children and pregnant women	To ensure better uptake and support by men, Wazazi Nipendeni should consider including some messages on nutrition for adults or specifically for men	Explore men's experience of and response to the messages

Key findings		Potential implications for the uptake of the Wazazi Nipendeni plus mNutrition intervention	Recommendations for the improvement of the Wazazi Nipendeni plus mNutrition intervention	Aspects to follow up in subsequent qualitative data collection
	information on nutrition for men			
	Women’s perception about the usefulness of nutrition messages for men varied. Some hoped that the messages would help to induce men’s interest and responsibility for their children’s nutrition which could translate into better support. Others feared their husbands would just ignore the messages and not share the content	Uptake of Wazazi Nipendeni plus mNutrition messages among men is likely to vary and so will engagement with content	To ensure better support for the uptake of the messages, men should be included in the target group for promotion activities	Explore men’s experience of and response to the messages (e.g. To what the extent did they share the content?)
Preferred format of information	Widespread perception that the uptake and effectiveness of the Wazazi Nipendeni plus mNutrition messages would be higher if the messages were combined with active communication as well as support	Uptake of the messages could be low due to lack of an interactive component	To encourage sustainable uptake the inclusion an interactive component could be considered	Explore women’s experience with the messages

## 4.3 Information needs and information-seeking behaviours related to nutrition

The section will present findings on participants' (mainly women's) current information needs and information-seeking patterns related to child nutrition and nutrition during pregnancy. Potential implications of the existing patterns on the uptake of the Wazazi Nipendeni plus mNutrition intervention will be discussed at the end of this section.

### 4.3.1 Information needs and information-seeking behaviours related to nutrition

#### 4.3.1.1 Information needs

Information needs can be recognised by the information seeker (i.e. the parent) or by the information expert (e.g. the nutritionist) in combination and these two need to work together to identify the actual information needs (Kaniki 2001).

#### Pregnant women

Pregnancy was an occasion that triggered women's interest in nutrition, an observation that has been previously highlighted in the literature (Szwajcer, Hiddink *et al.* 2008; Das and Sarkar 2014). Pregnant women identified a range of subjects that were ultimately concerned with ways of supporting babies' development and healthy growth, as a pregnant woman explained:

*We would like to know more about food for pregnant women so that we can deliver healthy babies with an acceptable weight, because when you deliver a baby weighing less than 2,500g [low birth weight] it is a problem. So, pregnant women have to eat nutritious food to deliver healthy babies.* (Pregnant woman, FGD, Bolira)

Pregnant women's main information needs were around which types of foods to consume and which ones to avoid during pregnancy. While most women had received basic information on food choices (i.e. the need for a diet rich in iron and vitamins) as part of their antenatal visits, they lacked specific information. Unmet information needs included how to eat a varied diet on a small household budget, how to satisfy food cravings when the desired food was not economically accessible or available (e.g. pumpkin leaves) and how to eat healthily despite morning sickness. In this context, several women explained that their health worker had advised them to eat eggs (high in protein, Vitamin A) and sardines (high in calcium for the prevention of pre-eclampsia) for a healthy pregnancy. However, these foods made many pregnant women nauseous or were too expensive and information on nutritious substitutes was needed:

*I don't feel like eating at this moment because whenever I eat, especially sardines, I vomit, but the situation is much better than before. I am living with my husband in the household and I usually prepare food for all of us except on the days when he wants something that I don't like to eat, like eggs. I haven't liked the smell of eggs since I conceived, but before that I used to eat them.* (Pregnant woman, FGD, Esula)

Iron deficiency remains a major public health problem among rural women in Tanzania, as highlighted in the previous desk review and by all three national nutrition experts interviewed. The majority of women was aware of the risk of iron deficiency during pregnancy (or 'insufficient blood', which was how it was frequently referred to). Most of the women could list foods that they were advised to consume to address their lack of iron (e.g. green leafy vegetable, meat and/or iron tablets from the pharmacy). However, many highlighted that access to these foods or supplements

was often difficult due to limited availability and/or lack of money, as noted by a pregnant woman in the following quote:

*Low income is the main reason for not eating healthy, because the father is getting only limited money and I'm not working. So, with little money we have to buy maize, pay debt, etc. If you say you want to eat meat twice a week [to improve iron intake] is not possible. You better buy maize to get flour that you can use for long time to feed the entire family* (Pregnant woman, IDI, Esula)

This underlines an information need on available, low-cost options to improve the iron status of pregnant women.

First-time mothers generally had the greatest information needs, especially single pregnant women, who often had difficulties in accessing antenatal care due to the lack of a husband or partner and relied on information from their own mothers:

*In my first pregnancy, I did not get any advice and I knew nothing because I conceived while at school. I didn't know anything and I was without any advice on what to do.* (Mother, IDI, Oloro)

A few pregnant women also voiced information needs with regards to how much physical labour they could do safely during pregnancy (e.g. farm work, strenuous household chores), as highlighted in the following:

*The type of work that pregnant women can do, because people are saying that if a pregnant woman is doing hard work she will experience a miscarriage.* (Pregnant woman, FGD, Ugwachanya)

### **Breastfeeding mothers**

In all six villages, most mothers and pregnant women (in the last trimester of pregnancy) were aware of the importance of breastfeeding and could explain that a baby should be breastfed after delivery and for the first six months of life. A mother from Ariga noted:

*The first breastmilk is good for the baby and you should breastfeed the baby for six months because it helps fight against diseases.* (Mother, FGD, Ariga)

Women generally understood why breastfeeding was the best nutrition for an infant:

*If you start giving other foods other than breastmilk, like porridge, it is dangerous to the health of the baby because the intestine is not strong enough to digest it. The baby should breastfeed for six months and thereafter you are allowed to give the baby other foods like porridge, water, tea and ugali.* (Mother, FGD, Ariga)

Most mothers were also aware that an HIV-infected woman should only breastfeed for the first six months after birth and then stop breastfeeding to minimise the risk of transmitting the HIV virus to baby. These findings supported the ones presented in the previous IDS desk review,<sup>11</sup> namely that knowledge about breastfeeding is generally good in Tanzania thanks to national policies to support breastfeeding; the Baby Friendly Hospital Initiative; community education on breastfeeding; and increased support for breastfeeding, especially since 2004 when the Prevention of Mother-to-Child Transmission of HIV programme was launched. However, the existing knowledge often has not

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<sup>11</sup> See also Barnett and Srivastava (2017)

translated into practice and currently only 59 per cent of infants are exclusively breastfed for six months and only 51 per cent are breastfed within one hour after birth (MoHCDGEC *et al.* 2016).

Mothers and pregnant women outlined several content areas where more information and guidance were desired. These areas included strategies to improve milk supply after delivery, practical help with positioning the baby to breastfeed and care of sore nipples. While mothers knew that a baby should be breastfed after delivery and that especially the first milk (colostrum) had '*all the nutrients and was good for baby's health*', there was a general uncertainty about when breastfeeding should start. Some women believed within one hour of birth (so called 'early initiation of breastfeeding', in accordance with WHO/UNICEF recommendations);<sup>12</sup> some were convinced a child should not be breastfed within the first hour (to give mothers time to recover and produce milk); and others recommended one and a half hours after birth. The quote from a young mother expresses the general uncertainty of many:

*The food to be given to the baby after delivery is breastmilk and it should be given up to six months, even though I don't know exactly when they should start breastfeeding.*  
(Mother, FGD, Esula)

Delivery via a caesarean section was experienced as an important barrier to early initiation of breastfeeding and the successful establishment of exclusive breastfeeding by several women. The association between caesarean section and poor breastfeeding practices has been highlighted in the literature repeatedly (Rowe-Murray and Fisher 2002). Women who had operative interventions in delivery stressed the need for more information about and support with breastfeeding.

Women were also unsure about the frequency and duration of each feed, especially when they were at work. A recommendation that many women had received from their health worker might have contributed to the uncertainty, namely:

*She [health worker] advised us on breastfeeding by telling us that we have to breastfeed the child for one hour and we have to sit down and handle the baby carefully while looking at the baby to breastfeed well.* (Mother, FGD, Oloro)

Related to this one of the national nutrition experts pointed out that maternal employment was one of the most common reasons why mothers discontinued exclusive breastfeeding early and introduced other foods and drinks early in Tanzania. There is a need for realistic breastfeeding recommendations that take mothers' busy daily schedules and work commitments into consideration.

Another frequently mentioned concern was whether and how a woman should continue to breastfeed when she got sick:

*I will ask the nurse, 'You said that the babies from birth to six months have to be breastfed only, so if I fall sick suddenly what other foods should be given to the baby?'* (Pregnant woman, IDI, Esula)

### **Information needs related to young child feeding**

When asked what a baby should eat after the first six months, almost all mothers and pregnant women explained that the nurse told them to feed *lishe* porridge, a multi-grain porridge made of ground rice, soya (for protein), groundnuts (for protein and fat), sorghum and deshelled maize. The

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<sup>12</sup> WHO recommends that mothers initiate breastfeeding within one hour of birth. Babies should be placed in skin-to-skin contact with their mothers immediately following birth for at least an hour and mothers should be encouraged to recognise when their babies are ready to breastfeed, offering help if needed (UNICEF/WHO 2016).

porridge was usually prepared with water, consumed as a beverage and believed to ‘*strengthen the health of the baby*’.

An analysis of the nutritional content of different types of porridge fed as complementary food in rural Tanzania conducted by Kulwa *et al.* (2015) concluded that the energy and nutrient content of most porridges was often insufficient to satisfy the demands of the growing infant, although porridge prepared with groundnuts and soya had a slightly better nutritional composition.

The nutritional quality of the *lishe* porridge prepared by mothers in the six villages was often compromised by the fact that many mothers could not afford to purchase all the ingredients for the porridge and therefore frequently prepared porridge from maize flour only (so-called *dona* porridge). A mother described:

*If it is not possible to get lishe flour we use dona flour to prepare porridge for babies. To be honest, most of us use dona and very few use lishe because it is very costly to prepare lishe... It is due to financial conditions. You may find you don't have money to buy those lishe ingredients like groundnuts and rice. So, you see it is better to mill maize that we harvest to get dona for our babies.* (Mother, FGD, Bolira)

Another barrier to the preparation of *lishe* porridge was that it was time-consuming to prepare, as noted in the following quote:

*You take maize and sorghum and buy soya in the shop and groundnuts and wash them separately and leave them to dry and afterwards you mix all ingredients and take for milling to get flour ready for use.* (Mother, FGD, Bolira)

Additionally, several health workers highlighted that *lishe* porridge was often contaminated by bacteria due to contamination of the flours during storage and incorrect preparation or contaminated water sources used for the preparation:

*So, most children get the problem of diarrhoea because lishe porridge is not well prepared. In that case, we insist them using dona porridge, even though some of them mix with sardines that affect their children.* (Health expert, IDI, Isana)

These findings suggest that information about low-cost, easy-to-prepare and nutritious complementary foods is needed.

### **Additional information needs identified by health and nutrition experts**

IDIs with health workers and national nutrition experts identified additional information needs that had not been mentioned, or were only mentioned by very few, in interviews and FGDs with mothers, pregnant women and other community members.

The Iringa region does not suffer from food insecurity,<sup>13</sup> nevertheless dietary diversity is very low. Most households consumed a monotonous diet of *ugali* – a staple dish made of maize, millet or sorghum flour cooked in boiling liquid to a stiff consistency – or rice with vegetables and sometimes beans, two or sometimes three times a day. It was uncommon to consume food between main meals. As highlighted by several health workers and one of the national experts, there was the widespread misperception that healthy food had to be purchased from the market, which was often impossible for financially and time-constrained rural households. One of the

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<sup>13</sup> See also Barnett and Srivastava (2017)

national experts explained several of the challenges related to the low dietary diversity of children's nutrition:

*Most people think that good diet is the one where you buy 'good' food from the market but they are not really aware of the food they have and the value of that food. We need to help the mothers to value the food they have and how best they can use the food have. Chicken, eggs and all other animals which they can raise themselves, so that they can get money to buy other things. They feel that these are just inferior foods and they don't bother to give [them] to the children.* (National nutrition expert, IDI, Dar-es Salam)

A health worker added:

*I think the big thing is how to prepare food, because some of them think maybe if they prepare these foods (vegetables) every day it is going to cost them a lot but it is not a must that someone should eat fish every day, but rather that they should look at all types of necessary foods and eat accordingly.* (IDI Health expert-Esula)

This highlights a need for information on how to prepare nutritious meals using inexpensive food and food from households' own agricultural production.

According to several health workers and one of the national experts, mothers and pregnant women needed more information about the negative effects of the consumption of alcohol on the unborn baby and the mother's ability to care well for an infant or older children. The consumption of alcohol among women was widespread in both districts and was seen as a major contributor to undernutrition among mothers and children, as said by a health worker from Lomola:

*Undernutrition for the children and mothers is common, because they [mothers] drink local beer that contributes to undernutrition due to lack of time to prepare food for their children, even though foods are available.* (Health worker, IDI, Lomola)

Health workers and all national experts pointed out that most mothers introduce complementary feeding too early (i.e. before the recommended six months) and thus increase the risk for morbidity and mortality of their infants. According to one national expert, some mothers start to feed solids as early as two months after birth. Reasons for the early introduction of food were summarised as follows:

*1) women are too busy because they have to work so can't practice exclusive breastfeeding for the first six months; 2) infants are crying so they [mothers] are given alternative foods; 3) perception that mother's milk is not enough to satisfied the needs of the infant; 4) lack of awareness regarding these issues.* (National health expert, IDI, Dar-es-Salam)

The health experts concluded that women need more information, but also continuous support – from the health workforce but also their families, husbands and mothers-in-law – to practise exclusive breastfeeding.

Alcohol consumption among rural women in Tanzania has recently been declared a public health problem (Isaksen, Østbye, Mmbaga and Daltveit 2015). In response to this, the government has launched stricter and more comprehensive policies on the sale and consumption of alcohol, including fines for pregnant women who consume alcohol on public premises.

### 4.3.2 Mothers' and pregnant women's current efforts to obtain nutrition information

To meet their information needs most women relied on a mix of passively absorbed information from antenatal visits and information they actively sought on specific nutrition and feeding issues. Active information-seeking often started with informal sources in the first instance. For example:

*If they [mothers] have problems with breastfeeding, they would like to ask their mothers, mothers-in-law, aunts. They do not rush to the hospital but rely on their own sources.*  
(National health expert, IDI, Dar-es-Salam)

The second contact point was usually formal sources, namely health workers from the local health facility or community health workers.

Mothers also mentioned radio programmes (e.g. Kings Radio), newspapers, flyers and banners at health facilities as frequent information sources.

In two villages, community health workers or community nurses organised occasional village meetings to educate participants about health and nutrition issues. Women were usually summoned to this meeting by the village chairman (making participation more or less mandatory) and generally found these occasions very informative.

Several health workers and a few mothers also mentioned nutrition programmes run by NGOs (e.g. Concern) or UNICEF that had been or still were active in Iringa region. However, based on the perception of several health workers and the national stakeholders, these programmes were usually short lived.

#### Mobile phone-based information on nutrition

Several women in both districts recalled that they had received SMS text messages with information on health and nutrition topics previously. Some women had received messages about a specific topic (e.g. messages sent by the government on birth registrations and certificates). Others had received promotional messages asking them to subscribe to health information services. A few mothers had signed up for Wazazi Nipendeni in one of their previous pregnancies and perceived the messages as useful, as one woman recalled:

*During pregnancy, I was sending messages with the word 'mtoto' to 15304. I don't remember the number clearly and then you get a list of information asking you whether you are pregnant or a young mother or you want family planning information. So, you choose one option and get information. The phone helped me a lot in my family to get information on pregnancy. You have to specify how many weeks pregnant you are, maybe you are 36 weeks pregnant. Afterwards you get messages every day on nutrition for pregnant woman, how to communicate with the baby while in the womb and other things.*  
(Mother, IDI, Esula)

#### 4.3.2.1 Information providers that women trust

The preferred and most trusted source of information for women (and men) in all six villages was health workers based in the health facility. Health workers were trusted because they were perceived as experts in health and nutrition. Women also believed that not following advice would lead to poor health and being reprimanded by the health worker, as the following quote shows:

*Yes, I trust her [the health worker] because she has knowledge. The advice given is useful and if you don't follow the advice by giving the child porridge when s/he is two or three months old the child will get problems. So, you have to go back to the hospital to seek advice and obviously, you will not have a story to tell the nurse, because you have already been given the advice before that you are not supposed to give any food other than breast milk. In that case, you have to follow the advice given by nurses. (Mother, IDI, Ariga)*

In general women trusted health staff employed in government facilities more than community health workers or health workers from mission hospitals, as one pregnant woman explained:

*We trust all health workers because all of them are working under the government. So, they are government representatives. (Pregnant woman, FGD, Isana)*

Community health workers and health workers from mission hospitals were perceived as less trustworthy than facility-based health staff, as women felt that they were less educated and their advice was less comprehensive.

The second most trusted source of information was interpersonal relationships and mainly women who had children already (e.g. neighbours, their own mother, mother-in-law, other female relatives, elderly women within the community). When asked why she trusted her mother's advice, a pregnant woman from Ariga said:

*I trust my mother because she is the one who took care of us when we were young and I know she won't tell lies and is knowledgeable as well. (Pregnant woman, FGD, Ariga)*

When asked whose advice they value most, the majority of women said that they trusted health workers more than family members or other social contacts. Health workers' advice was perceived as more informed and based on evidence and education.

Several women also mentioned that they regularly obtained health and nutrition information from the radio. Information from the radio was generally regarded as trustworthy as radios operated under the mandate of the government. A mother from Esula also noted:

*I trust information from the radio because you may hear doctor so and so is saying that and no journalist can air information that has no evidence. (Mother, FGD, Esula)*

However, several participants also pointed out that not everybody in the village owned a radio and therefore could not access these information sources.

#### **4.3.2.2 Preferred formats for nutrition information**

Women relied more on interpersonal or face-to-face communication than on other sources of information (e.g. ICT-based information, printed information). Educational group seminars and counselling by health workers were both liked as they provided mothers with the opportunity to ask questions.

Several mothers and health workers revealed that practical demonstrations as part of an educational seminar could be an effective approach to trigger behaviour change, as expressed in the following quote:

*The first time we advised them [the mothers] to drink dona porridge they told us 'we are not used to this porridge' but then we had a practical session on food preparation and we*

*prepared it and they had the opportunity to taste it. They accepted it even though they refused in the first place saying that it is for children. Before we advised them, they were eating ugali in the morning using husk maize flour and often experienced stomach ache.* (Health worker, IDI, Lomola)

Mothers and health workers also frequently mentioned the value of written information on nutrition (e.g. brochures, flyers, newspapers and SMS text messages). Written information was appreciated as people could take it home and read it at a time that suited them. Written information that was perceived as useful could also be read repeatedly and shared more easily and accurately with others. A few men and women highlighted that they would like written material with a contact telephone number they that could call in case of specific questions:

*If possible we would like to get brochures and SMSs. It is better to have the numbers than if we have a question we can ask through SMS. The number should be written on brochures to get more information.* (Pregnant woman, FGD, Isana)

### **4.3.2.3 Barriers to accessing nutrition information**

#### **Limited frequency, lengths and depth of exposure to nutrition information**

Formal information on IYCF and nutrition practices during pregnancy are mainly provided to women through antenatal clinics and child growth monitoring at the health clinic. Pregnant women are required to attend four antenatal visits, with the initial visit before 16 weeks of pregnancy, a second visit between 20 and 24 weeks, a third visit between 28 and 32 weeks, and a fourth visit at 36 weeks. During antenatal visits women receive a number of services including pelvic examinations, different clinical and laboratory tests (including for HIV/AIDS), checks for obstetric complications, drug and supplement administration and advice, immunisations, and counselling on various pregnancy and child care-related issues including nutrition (Women and Health Initiative 2014). Given the high number of services each woman is supposed to receive and the limited number of antenatal visits overall, exposure to nutrition information is very limited and seldom in-depth.

In this context, it should be noted that less than half of all women receive the recommended four visits and only 15 per cent of all women have their first visit before 16 weeks, both of which further reduce exposure to and the value of nutrition information (Women and Health Initiative 2014).

Some mothers said that they received advice on child nutrition during monthly growth-monitoring sessions to track children's nutrition status at a health clinic. However, most women complained that they did not receive any advice, as noted by a mother:

*We have never received any advice on nutrition for babies during growth monitoring. We just weigh the baby and off we go.* (Mother, FGD, Esula)

#### **Lack of time**

Several mothers mentioned lack of time as a barrier to accessing nutrition information. They described that they had to go to the health facility to see the nurse with specific questions and that they simply could not find the time for this in their busy daily schedules including work commitments, household chores and care for other family members. For example:

*It is somehow difficult because in order to get information on nutrition we have to go to the nurse, so it's difficult to say we get them easily. We don't have time; for instance, I leave*

*for work in the morning and when I come back I have to cook for the children, wash their clothes and do other activities. (Mother, FGD, Bolira)*

### **Limited availability of information within the community**

Nutrition advice is mainly provided in local health clinics that are often located outside the community and require women to travel (in some cases more than 8km). Community health workers based in the communities provide basic health care (e.g. vaccination), but usually provide no or very limited nutrition advice.

### **Perceived limited capacity to understand nutrition information**

A few women believed that they were not educated enough to understand most of the information on nutrition available to them. Consequently, they often did not engage with the available information but occupied themselves with other tasks. For example:

*There is difficulty for us in getting information because of our low level of education. It is not easy for a person to educate you while you don't understand. We have a low level of education and even when our fellow mothers here mention things like vitamins most of us don't know. So, to get knowledge on nutrition is difficult and you may watch TV when they are showing some fruit and instead of watching and getting knowledge you get busy with other business (Mother, FGD, Bolira)*

#### **4.3.2.4 Utilisation of health and nutrition information**

Mothers and pregnant women explained that they mostly attempted to follow advice provided by health workers as they believed it to be beneficial for their children's health.

Advice provided by informal sources such as family members was sometimes followed and sometimes not, depending on whether it was perceived as correct by the recipient and matched information they had received from other sources previously:

*Doing comparison on information you receive from different sources is very important because you might get advice from home and then compare it with information provided at the health facility to see if it is correct. We trust information given at home but [it's] not the same as those given at the health facility because all services and treatment are available at the hospital but not at home. Sometimes the information given at home may affect your health when you follow it. (Pregnant woman, FGD, Oloro)*

### **4.3.3 Potential implications for the uptake of the Wazazi Nipendeni plus mNutrition intervention**

Table 4.3 shows the key findings on women's information needs and information seeking behaviours related to IYCF and dietary practices during pregnancy. The third column presents suggestions for the Wazazi Nipendeni plus mNutrition intervention design based on the qualitative findings. The last column on the right highlights aspects to follow up in subsequent qualitative data collection rounds (i.e. the qualitative midline and the qualitative follow-up at the endline).

**Table 0.3: Qualitative key findings on information needs and information-seeking behaviours in the six qualitative study communities**

Key findings		Potential implications for the uptake of the Wazazi Nipendeni plus mNutrition intervention	Suggestions for the Wazazi Nipendeni plus mNutrition design based on emerging qualitative findings	Aspects to follow up in subsequent qualitative data collection
Information needs of pregnant women	Pregnancy as an occasion to trigger an increase in interest in nutrition. Pregnant women are interested in information related to the prevention of low birth weight and promotion of healthy development of their baby	The Wazazi Nipendeni plus mNutrition messages cover many of the priority information needs of pregnant women and might therefore be well received	The messages should include content on the prevention of low birth weight and healthy child development	Explore women’s experiences with, uptake and utilisation of the different nutrition content in the messages
	Specific information needs include how to prepare low-cost, varied meals, eating healthily despite food cravings and morning sickness	The Wazazi Nipendeni plus mNutrition messages may cover many of the specific information needs of pregnant women and might therefore be well received	The messages should include content on low-cost nutritious meals, healthy eating during food cravings and morning sickness	Explore women’s experiences with, uptake and utilisation of the different nutrition content in the messages (e.g. How did it enable them to produce low-cost healthy meals?)
	Pregnant women are aware of the risks of iron deficiency, but there is a need for information on low-cost, iron-rich foods and supplements	Wazazi Nipendeni plus mNutrition messages provide recommendations for iron-rich foods and how to improve iron intake and absorption. Messages may be well received	The messages should contain information on low-cost, iron-rich foods and how to facilitate iron absorption	Explore pregnant women’s experience of the information on iron intake provided in the messages (How useful was the content? Why?/Why not? What was missing? Did it reduce/ ameliorate anaemia?)
Information needs of breastfeeding mothers	Good knowledge about the importance of exclusive breastfeeding, initiation after birth and guidelines on breastfeeding among HIV-infected mothers (especially among women who had children already)	Wazazi Nipendeni plus mNutrition messages may not provide new information to women; however, they might act as a refresher of existing knowledge	Regular monitoring of the perceived usefulness of the messages and potential adaptation of content might help to ensure effective and sustainable uptake	Explore how mothers with and without existing children perceived the messages (e.g. Did the messages provide new knowledge/refresh existing knowledge? How and why?)
	Specific information needs related to milk	Wazazi Nipendeni plus mNutrition messages may address these	The messages should include practical information on milk supply	Explore whether breastfeeding mothers perceive the messages as

Key findings		Potential implications for the uptake of the Wazazi Nipendeni plus mNutrition intervention	Suggestions for the Wazazi Nipendeni plus mNutrition design based on emerging qualitative findings	Aspects to follow up in subsequent qualitative data collection
	supply management, positioning of the baby, nipple care and continuation of breastfeeding when the mother is sick	specific information needs and may therefore be well received	management, positioning of the baby, nipple care and continuation of breastfeeding when mother is sick	useful (Why/why not? Did the messages influence their practices? How? What were the challenges?)
	Information needs related to the early initiation of breastfeeding including what early initiation means in practice, initiation of breastfeeding after caesarean section	Wazazi Nipendeni plus mNutrition messages may address these specific information needs and may therefore be well received	The messages should include practical information on early initiation of breastfeeding and breastfeeding initiation and management after caesarean sections	Explore whether breastfeeding mothers perceive the messages as useful. (Why/why not? Did the messages influence their practices? How? What were the challenges?)
	Unmet information gaps with regard to the necessary lengths and frequency of each feed and how to combine breastfeeding with work commitments	Wazazi Nipendeni plus mNutrition messages may address these specific information needs and may therefore be well received	The messages should include practical information on frequency and length of breastfeeding sessions, plus practical information on breastfeeding for working mothers	Explore whether breastfeeding mothers perceive the messages as useful (Why/why not? Did the messages influence their practices? How? What were the challenges?)
Information needs on young child feeding	<i>Lishe</i> porridge is recommended as the best complementary food by health workers; however, its nutritional quality is compromised by mothers' inability to purchase all necessary ingredients and bacterial contamination due to unsafe preparation and/or storage	Wazazi Nipendeni plus mNutrition messages may provide practical suggestions for low-cost, easy-to-prepare and nutritious complementary foods and may therefore be well received	The messages should provide practical suggestions for low-cost, easy-to-prepare and nutritious complementary foods	Explore whether mothers perceive the recommendations on complementary foods as useful and feasible within their specific living context (Why/why not? Did the messages influence their practices? How? What were the challenges?)
	Preparation of <i>lishe</i> porridge is time-consuming and costly	Wazazi Nipendeni plus mNutrition messages may provide practical suggestions for low-cost, easy-to-	The messages should provide practical suggestions for low-cost,	Explore whether mothers perceive the recommendations on complementary foods as useful and

Key findings		Potential implications for the uptake of the Wazazi Nipendeni plus mNutrition intervention	Suggestions for the Wazazi Nipendeni plus mNutrition design based on emerging qualitative findings	Aspects to follow up in subsequent qualitative data collection
	and is therefore often replaced by less nutritious porridge made out of maize flour ( <i>dona</i> porridge)	prepare and nutritious complementary foods including alternatives to <i>lishe</i> porridge and may therefore be well received	easy-to-prepare and nutritious complementary foods  Messages should also highlight the poor nutritional value of feeding porridge made from maize flour only	feasible within their specific living context (Why/why not? Did the messages influence their practices? How? What were the challenges?)
Information needs identified by health experts	Information needs on how to prepare low-cost, easy-to-prepare and nutritious meals. Food insecurity is not a problem in Iringa region but low dietary diversity and low meal frequency are (for children and adults). There is also the misconception that healthy food has to be purchased (rather than coming from people's own agricultural production)	Wazazi Nipendeni plus mNutrition messages may provide practical suggestions for low-cost, easy-to-prepare and nutritious foods and may therefore be well received	The messages should provide practical suggestions for low-cost, easy-to-prepare and nutritious meals, including from their own agricultural production	Explore whether mothers perceive the recommendations on nutritious foods as useful and feasible within their specific living context (Why/why not? Did the messages influence their practices? How? What were the challenges?)
	Information needs on the negative effects of maternal alcohol consumption on the unborn baby and young child	Wazazi Nipendeni plus mNutrition messages may include information on alcohol consumption among pregnant women and mothers	The messages should include information on the negative consequences of maternal alcohol consumption	Explore whether the messages include information about the consumption of alcohol, how mothers perceive these messages and whether they are useful (Why/why not? Did the messages influence practices? How?)
	Need for continuous support and information on the benefits of exclusive breastfeeding	Wazazi Nipendeni plus mNutrition messages are likely to provide continuous information on breastfeeding; however, the translation of the messages needs to be supported by the health workforce and social environment of the mothers	The messages should include practical information on how and where women can get support for optimal breastfeeding practices and how they might be able to entice continuous support from their social environment	Explore whether mothers perceive the messages on breastfeeding as useful and feasible within their living context (Why/why not? Did the messages influence practices? How?)

Key findings		Potential implications for the uptake of the Wazazi Nipendeni plus mNutrition intervention	Suggestions for the Wazazi Nipendeni plus mNutrition design based on emerging qualitative findings	Aspects to follow up in subsequent qualitative data collection
Information-seeking behaviour	Women seek actively information from informal networks and passively absorb information during antenatal visits	Wazazi Nipendeni plus mNutrition messages may not provide new information to women; however they might act as a refresher of existing knowledge	Regular monitoring of the perceived usefulness of the messages and potential adaptation in the content might help to ensure effective and sustainable uptake	Explore whether mothers value the messages (e.g. Did the messages provide new knowledge or refresh existing knowledge? How and why?)
	Radios are perceived as a good and trusted information source on health and nutrition. Radios are trusted as they are perceived to operate under the government's mandate	Wazazi Nipendeni plus mNutrition messages may not provide new information to women; however, they might act as a refresher of existing knowledge  Contrasting information may lead to confusion and loss of trust in the messages	Regular monitoring of the perceived usefulness of the messages and potential adaptation in the content might help to ensure effective and sustainable uptake	Explore whether mothers value the messages (e.g. Did the messages provide new knowledge/refresh existing knowledge? How and why?)
	Some women had previous exposure to mobile phone-based information on child and maternal health and found the messages informative	Women who have already received mobile phone-based messages may be willing to sign up again; however, the Wazazi Nipendeni plus mNutrition messages may not provide new information	Wazazi Nipendeni plus mNutrition may need to consider different content for messages sent to mothers who subscribe for the second or subsequent times	Explore how mothers who had previous exposure to mobile phone-based messages perceive the messages. (Were the messages useful, why/why not?)
Trusted sources	Facility-based health workers were the most-trusted formal information source. They were trusted because they were believed to work under the mandate of the government and free of charge	Wazazi Nipendeni plus mNutrition messages that are framed as messages from the government are more likely to be taken up than messages that are framed differently	Appropriate framing of the messages and sender might be important for successful uptake. Involvement of health services (e.g. as sender) might increase uptake.	Explore whether women trust the messages (e.g. Did they trust the content of the messages? Why/why not? Did the sender influence their decision to trust the content?)
	Nutrition information provided through interactive face-to-face communication and with	The lack of oral interaction about the content of the messages might reduce uptake or lead to drop-outs	Promote active interaction about the content of the messages within the household, the community and potentially through call centre	Explore how mothers perceive the lack of oral communication about the messages (Did they perceive it as a barrier to uptake?)

Key findings		Potential implications for the uptake of the Wazazi Nipendeni plus mNutrition intervention	Suggestions for the Wazazi Nipendeni plus mNutrition design based on emerging qualitative findings	Aspects to follow up in subsequent qualitative data collection
	practical demonstration is preferred			
	Written information is valued and trusted as it could be read at a convenient time, repeatedly referred to and more accurately shared with others	As Wazazi Nipendeni plus mNutrition messages are provided in text messages they may be well received	–	Explore how mothers interact with the messages (e.g. Were the messages shared, read again, deleted?)
Barriers to access to nutrition information	While women are exposed to (at least) some nutrition information, length, depth and frequency of exposure is limited	Wazazi Nipendeni plus mNutrition messages provide information with a higher frequency and may therefore be well received	–	Explore how women perceived the frequency and depth of information provided in the nutrition messages (e.g. Did they address existing knowledge gaps?)
	Lack of time to actively seek information from formal health workers and limited available of nutrition information within the community	Wazazi Nipendeni plus mNutrition messages may help to address existing knowledge gaps and save time and effort for women	Promote the multiple benefits of the messages (including time saved) to ensure uptake	Explore whether messages could address women’s existing information needs and replace/complement conversations with health workers

## 4.4 Social, economic and environmental factors that may influence behaviour change related to child nutrition and nutrition during pregnancy

Changing established behaviours – whether they are related to child or maternal nutrition – is difficult (Barnett, Scott, Batchelor and Haddad 2016). The initial exploratory qualitative study findings provide valuable insights into various social, economic and environmental factors that may act as barriers to behaviour change in response to the Wazazi Nipendeni plus mNutrition messages.

### 4.4.1 Poverty

Poverty emerged as the main barrier to improving dietary intake during pregnancy and IYCF in all six villages. Many women said that they simply could not afford to buy all the ingredients necessary to prepare nutritious complementary food (i.e. *lishe*) or eat a varied diet during pregnancy. Given their limited financial means they had to rely on a monotonous daily diet based on staples and green vegetables:

*Lack of money to buy something else is our problem, so that you can change your diet. You may want to change the diet but due to economic constraints you cannot.* (Mother, FGD, Ariga)

Limited financial resources were also perceived as the main reason for the low meal frequency of many households, as a pregnant woman highlighted:

*Our diet is not healthy at all. We usually eat only two meals a day. But other families are eating three times a day morning, afternoon and evening. This mainly depends on the income a person has.* (Pregnant woman, FGD, Ariga)

Women were often forced to navigate the available household budget carefully to ensure that the household's food supply remained sufficient to meet basic needs. A varied diet with animal protein was perceived as a luxury in this context, as noted in the following quote:

*Low income is the main reason for not eating healthy, because the father is getting only limited money and I'm not working. So, with little money we have to buy maize, pay debt, etc. If you say you want to eat meat twice a week is not possible.* (Mother, IDI, Esula)

### 4.4.2 Limited availability of and access to fresh foods

Acute food insecurity is not a problem in the Iringa region as highlighted previously (Barnett and Srivastava 2017).<sup>14</sup> Nevertheless, access to and availability of fresh foods (e.g. fruits, meat, vegetables) often poses a challenge. The main reason for this is difficult access to local markets, due to distance and costs associated with the trip, lack of time and money, as stressed by several women:

*There are no market places nearby. It's hard to get all these things in this area, even meat you can only eat once a month. You may want to eat something and you have money but*

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<sup>14</sup> See also section 4.3 of this report.

*you cannot because you have to have 2,000 shillings for transport to go to the next town to get fruit.* (Pregnant woman, FGD, Isana)

Access to fresh food also varies greatly between seasons and especially during the dry season the variety of foods on local markets is limited:

*In this village, there are problems related to nutrition because during the dry season we don't have green vegetables. A mother may have maize flour but there are no side dishes, which compels them to drink porridge or sometimes her to prepare tomato salad and eat it with ugali.* (Health worker, IDI, Isana)

#### **4.4.3 Time allocation conflicts**

Most women (especially in Iringa Rural) worked on the household's farm. Women in Mufindi often worked in the local tea plantations or petty trading/small business in town.<sup>15</sup> Work could place a substantial time burden on women and forced them to condense household chores and in particular the time spent on food preparation and purchasing fresh foods in distant local markets. A health worker summarised what several of the interviewed health workers said:

*The problem is most women are employed and don't have time to make different meals so what they do is they cook ugali, which will be eaten for the whole day and the child will eat that food* (Health worker, IDI, Esula)

#### **4.4.4 Delayed and limited use of antenatal care due to men's refusal to attend**

According to the antenatal care guidelines, women are requested to bring their husbands or partners to their first antenatal appointment (Ministry of Health and Social Welfare 2008). The attendance of the men aims to help women follow antenatal care recommendations (including recommendations on nutrition), encourage shared decision-making with regards to all pregnancy-related issues, improve the health of mother and baby and reduce maternal mortality (Women and Health Initiative 2014). While many men were supportive and accompanied their partners to antenatal visits, a substantial number of men refused to attend, thus often delaying the initial antenatal visit of their partners.

The most commonly reported reason for men's refusal to attend antenatal care was that they feared being tested for HIV during the first antenatal visit. A health worker from Ariga explained this fear:

*It's because they are insecure about their health status, due to being unfaithful in marriage, and so they think going to the hospital will expose them.* (Health worker, IDI, Ariga)

A woman who wants to register for antenatal care without her male partner has to present a letter from the village chairman explaining why the husband cannot attend or pretend that her husband has passed away, both of which could be barriers to attendance.

Delayed antenatal care attendance could have negative consequences for maternal and child health, as pointed out by a health worker:

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<sup>15</sup> See also Barnett and Srivastava (2017)

*For pregnant women, if they are late to start attending the clinic, at six and seventh months of pregnancy, they miss other services that are supposed to be given and they won't get them. (Health worker, IDI, Oloro)*

#### **4.4.5 Widespread alcohol consumption among pregnant women and mothers**

Frequent consumption of alcohol (mainly local beer) among pregnant women and mothers of young children was common and could result in poor pregnancy outcomes and care practices for the infant.

Parents who regularly consumed alcohol also often spent the limited household budget on alcohol rather than food, as a health worker noted:

*I think fathers drink more than mothers. But still it's a problem because if the father drinks alcohol then he doesn't supply his households with the necessary requirements, which becomes a problem for the household expenses. (Health worker, IDI, Oloro)*

#### **4.4.6 Limited support for infant and child feeding from husbands**

Fathers' support and active participation has been shown to be an important determinant for good breastfeeding and child feeding practices (Bilal, Dinant *et al.* 2015; Rollins, Bhandari *et al.* 2016).

While several husbands said that they actively supported their wives during pregnancy and with child care (e.g. bringing the child to bed, playing with the child), many fathers took only limited interest in all child care-related issues and pregnancy. A health worker described:

*When men get married here they think caring for children and all clinic processes [related to antenatal care and child birth] are for women, without thinking that they are also responsible for this. Women should be helped by their husbands in all their needs during pregnancy, but they provide minimum support. (Health worker, IDI, Oloro)*

#### **4.4.7 Low diversity in agricultural production**

Participants usually did not cultivate a large diversity of food crops; meat production was rare and animals were slaughtered infrequently. Households also frequently sold most of the food they produced to get money for the purchase of other foods and services. As a consequence, the diversity of foods available to the households was limited, especially with regards to fruit, vegetables and meat. Several health workers and national nutrition experts stressed that households had to be educated about growing a variety of foods to increase their nutritional wellbeing:

*It is not about what we farm, it is about education. Because if people would have knowledge they would have cultivated something different from what they are cultivating. Things which have more nutrients than what we are currently farming. For example, we are cultivating maize and are used to eating ugali most of the time. (Health worker, IDI, Oloro).*

#### **4.4.8 Poor access to safe drinking water and sanitation**

Access to safe drinking water and improved sanitation was a challenge in both districts, as well as Tanzania overall (Barnett and Srivastava 2017). Health workers and national experts associated poor water and sanitation with the high prevalence of diarrhoea and worm infestations among children. In the literature, intestinal infections caused by water-borne diseases have been associated with undernutrition in children (Caulfield, de Onis, Blössner and Black 2004).

In Iringa Rural shortage of drinking water and lack of money to purchase water from a water vendor forced many households to resort to unsafe open water sources (i.e. a local river). In both Mufindi and Iringa Rural open defecation was still common, although there were different national programmes aiming to improve sanitation and efforts to develop a national WASH strategy (THDR 2017). Nevertheless, national-level funding for water and sanitation remains limited (UNICEF 2017).

#### **4.4.9 Potential implications of the findings for behaviour change related to agriculture and nutrition**

Table 4.4 shows the key findings on social, environmental and economic factors that may influence behaviour change related to child nutrition and maternal nutrition in the response to the Wazazi Nipendeni plus mNutrition messages. Column 3 presents suggestions for the design of the Wazazi Nipendeni plus mNutrition intervention; and column 4 highlights aspects to follow up in subsequent qualitative data collection rounds.

**Table 4.4: Qualitative key findings on social, environmental and economic factors that may influence behaviour change related to nutrition in the six qualitative study communities**

Key findings		Potential implications for the uptake of the Wazazi Nipendeni plus mNutrition intervention	Suggestions for the Wazazi Nipendeni plus mNutrition intervention design based on emerging qualitative findings	Aspects to follow up in subsequent qualitative data collection
Poverty	Due to low income, households are unable to purchase nutritious, varied food stuffs from local markets and have to rely on their own (monotonous) production. Misconception that nutritious food has to be bought	Wazazi Nipendeni plus mNutrition messages that promote a more varied diet based on own production might be very effective, as they save money and improve maternal and children’s diets	Messages should include information on how to prepare varied, nutritious meals using households own production and/or only limited, low-cost external foods	Explore how mothers experienced dietary advice provided by the messages. (Was it helpful? Did it lead to a change in practices? Why/why not?)
Limited access to fresh foods	Access and availability to fresh foods poses a challenge	Mothers might be unable to follow advice regarding consumption of fresh food (e.g. vegetables, meat) due to limited availability and access	The messages should consider region-specific challenges to access to and availability of fresh foods	Explore whether households changed their consumption of fresh foods in response to the messages (Why/why not?)
Time allocation conflicts	Work poses a substantial time burden on women and prevents them from travelling to local markets to purchase fresh foods and preparing healthy meals (including complementary foods)	Wazazi Nipendeni plus mNutrition messages that promote time-saving techniques for the preparation of healthy meals might be very effective  Lack of time may hamper the likelihood that messages are translated into practice	The messages should consider the time demands on women and suggest quick and healthy meal options	Explore whether women perceive time as a barrier to following the messages (Why/why not? How did they deal with it?)
Delayed antenatal visits	Delayed or limited antenatal visit due to men’s refusal to attend (in some cases due to fears of HIV testing) may put maternal and child health at risk	Wazazi Nipendeni plus mNutrition messages that only promote antenatal care to women without encouraging men to attend with their partners may have limited effectiveness	The messages should encourage men to accompany their partners during antenatal visits (e.g. by highlighting the multiple benefits of antenatal care)	Explore whether the messages affect the timing of antenatal care attendance and whether men attend with women (How and why?)
Alcohol consumption	Frequent alcohol consumption can negatively affect birth	Continued alcohol consumption may hamper uptake of the messages	The messages should address alcohol consumption among	Explore how the messages on alcohol are perceived

Key findings		Potential implications for the uptake of the Wazazi Nipendeni plus mNutrition intervention	Suggestions for the Wazazi Nipendeni plus mNutrition intervention design based on emerging qualitative findings	Aspects to follow up in subsequent qualitative data collection
	outcomes and mother's abilities to care for the newborn and also limits economic resources for food		pregnant women, mothers and fathers	
Limited male support	Limited male support during pregnancy and with child care	Wazazi Nipendeni plus mNutrition messages targeted at fathers may help to promote stronger male support during pregnancy and for child care	The messages should highlight the importance of male support during pregnancy and for child care (e.g. strategies women can use to encourage their partners)	Explore how men perceive the messages. Are they useful and do they help men to support their partners? (How? Why? How useful do women find the guidance on encouraging their partners?)
Low diversity in agriculture production	Low diversity in agriculture production contributes to low dietary diversity	Wazazi Nipendeni plus mNutrition messages that educate households on the diversification of the food crop production might contribute to higher dietary diversity	The messages should promote diversification of food crop cultivation	Explore whether households diversify their food crop cultivation in response to the messages and whether this has an effect on dietary diversity
Poor access to improved water and sanitation	Poor access to improved water and sanitation is a challenge in all villages and a major cause of diarrhoea and worm infestations	If access to water and sanitation is not improved the effectiveness of nutrition-related behaviour change may be limited	–	Explore whether poor access to water and sanitation remains a problem and how it affects the health and wellbeing of mothers and children

## **5 Summary of the main findings and potential implications for the uptake of Wazazi Nipendeni plus mNutrition**

The findings presented in this report have a number of potential implications for the uptake of Wazazi Nipendeni plus mNutrition messages, the effectiveness of the messages in triggering change in dietary practices, and for the evaluation and subsequent qualitative data collections. Detailed presentations of the findings and their potential implications have been presented at the end of each sub-section in section 4. In this section we provide a summary of the key findings for each sub-section only.

### **5.1 Access to, use of and attitudes towards mobile phones**

- Access to a mobile phone is generally good in both districts, although there is a gendered dimension in ownership and use. Young married and unmarried women are often excluded or have only limited or controlled access to a mobile phone. This may restrict access to Wazazi Nipendeni plus mNutrition messages.
- Mobile phone-sharing is uncommon among couples and messages sent to one household member may not be shared with other members.
- Women are comfortable and familiar with text messages (SMS) and able to read them. Wazazi Nipendeni plus mNutrition messages might be an effective approach to inform pregnant women and mothers, as long as they have access to a mobile phone.
- People's attitude towards MNOs seems to be neutral and is unlikely to affect uptake of and trust in the Wazazi Nipendeni plus mNutrition messages.

### **5.2 Potential barriers to and facilitators of the uptake of the Wazazi Nipendeni plus mNutrition messages**

- Mobile network coverage is good in all six villages – but the remoter the village, the worse the network coverage – and Wazazi Nipendeni plus mNutrition messages should arrive regularly and without delay.
- Access to electricity poses a problem for many households in Iringa Rural and could cause messages to be delayed or missed if the phone is not charged somewhere outside the house in a timely manner. If a mobile phone is switched off (e.g. because the battery is empty), text messages that were sent to this phone will be stored on the server for a maximum of 48 hours and then disposed of.
- Economical and logistical barriers to regular access to call credit for mobile phone top-ups could result in deactivation of SIM cards if new credit is not purchased within a specific time period.
- Multiple SIM card use is common to capture best tariffs and network coverage. However, as dual SIM card phones are still rare most people have to manually exchange SIM cards and could therefore easily miss Wazazi Nipendeni plus mNutrition messages.

- Tanzania is a patriarchal society and husband and fathers frequently control women's access to a mobile phone. This could negatively affect the uptake of the messages by women.
- Positive attitudes towards mobile phone-based messages with nutrition content among women, health workers and some men could promote effective uptake.

### **5.3 Information needs and information-seeking behaviour**

- Pregnant women, breastfeeding mothers and mothers of young children already have a good knowledge base on nutrition during pregnancy and IYCF. However, they identified various specific information needs that are not sufficiently addressed during routine antenatal check-ups or occasional nutrition advice during growth-monitoring sessions. Wazazi Nipendeni plus mNutrition messages may help to address existing information gaps by providing specific information regarding foods and their nutritional value.
- Information needs are greater among first-time mothers and adolescent mothers, who often face multiple barriers to accessing antenatal care, including the requirement to bring the father of the child along. Wazazi Nipendeni plus mNutrition messages may help to address existing information gaps and barriers to accessing services.
- There is a need for contextualised information on breastfeeding, complementary feeding and child feeding that takes women's individual living conditions into consideration (e.g. work, lack of time and resources).
- Facility-based health workers are the most trusted source for health and nutrition information as their advice is perceived to be supported and approved by the government. Appropriate framing of the Wazazi Nipendeni plus mNutrition messages is important to build trust and ensure uptake.
- Information delivery channels that encourage active interaction and communication are preferred. Uptake of one-way information delivery through Wazazi Nipendeni plus mNutrition messages might be limited.
- While most women are exposed to at least some information on child and maternal nutrition, exposure to information is infrequent, short and often lacks depth. Wazazi Nipendeni plus mNutrition messages may help to address the existing shortcomings.

### **5.4 Social, economic and environmental factors that may influence behaviour change**

- Poverty and low income might pose a substantial barrier to the change in dietary practices as women and households cannot afford nutritious foods. Wazazi Nipendeni plus mNutrition messages could potentially address this barrier.
- Limited access to and availability of fresh foods, limited time for food preparation and limited agricultural diversification may act as barriers to improvements in dietary diversity if not considered sufficiently in the Wazazi Nipendeni plus mNutrition messages.

- Delayed antenatal visits, frequent alcohol consumption among both mothers and fathers, and poor access to improved water and sanitation may jeopardise the impact of behaviour change in response to Wazazi Nipendeni plus mNutrition messages.

All of these factors and their potential impact will be explored further in future rounds of the qualitative evaluation.

## **5.5 Guidance for the development of the qualitative midline**

Findings from the initial qualitative study will inform the tool development and analysis of the qualitative midline studies (and qualitative follow-up studies at the endline). The summary tables at the end of each sub-section of this report summarise and highlight the most important potential barriers to and enablers of the successful up-take of messages that emerged from the analysis of the initial qualitative study. In the midline, these factors and their potential interaction with Wazazi Nipendeni plus mNutrition services will be explored further. For example, the initial qualitative study highlighted gender-specific barriers to the access to a mobile phone, widespread alcohol consumption as a potential issue for child care and the role of maternal employment in decision-making regarding IYCF.

## **5.6 Comparison of the initial qualitative findings between Ghana and Tanzania**

As stated in the introduction of this report, mNutrition is being evaluated in Ghana and Tanzania. A comparison of the key findings from the initial qualitative studies revealed several similarities but also differences between the two countries that may affect the up-take of the intervention in the two countries.

In both countries access to mobile phones seem to be relatively good, although women were generally less likely than men to own or have regular access to a mobile phone. Consequently, reaching women with the mNutrition messages may be challenging in both settings. In both countries, multiple SIM card use was common and may result in messages being missed. Formal information providers (i.e. health workers, agriculture workers) were the most trusted source of information, however, there were gaps in the service delivery (e.g. due to staff shortages) in both countries that may be addressed by mNutrition. Poverty, food insecurity, lack of time to prepare food and limited agriculture diversity were highlighted as barriers to a change in dietary and agricultural (Ghana only) practices.

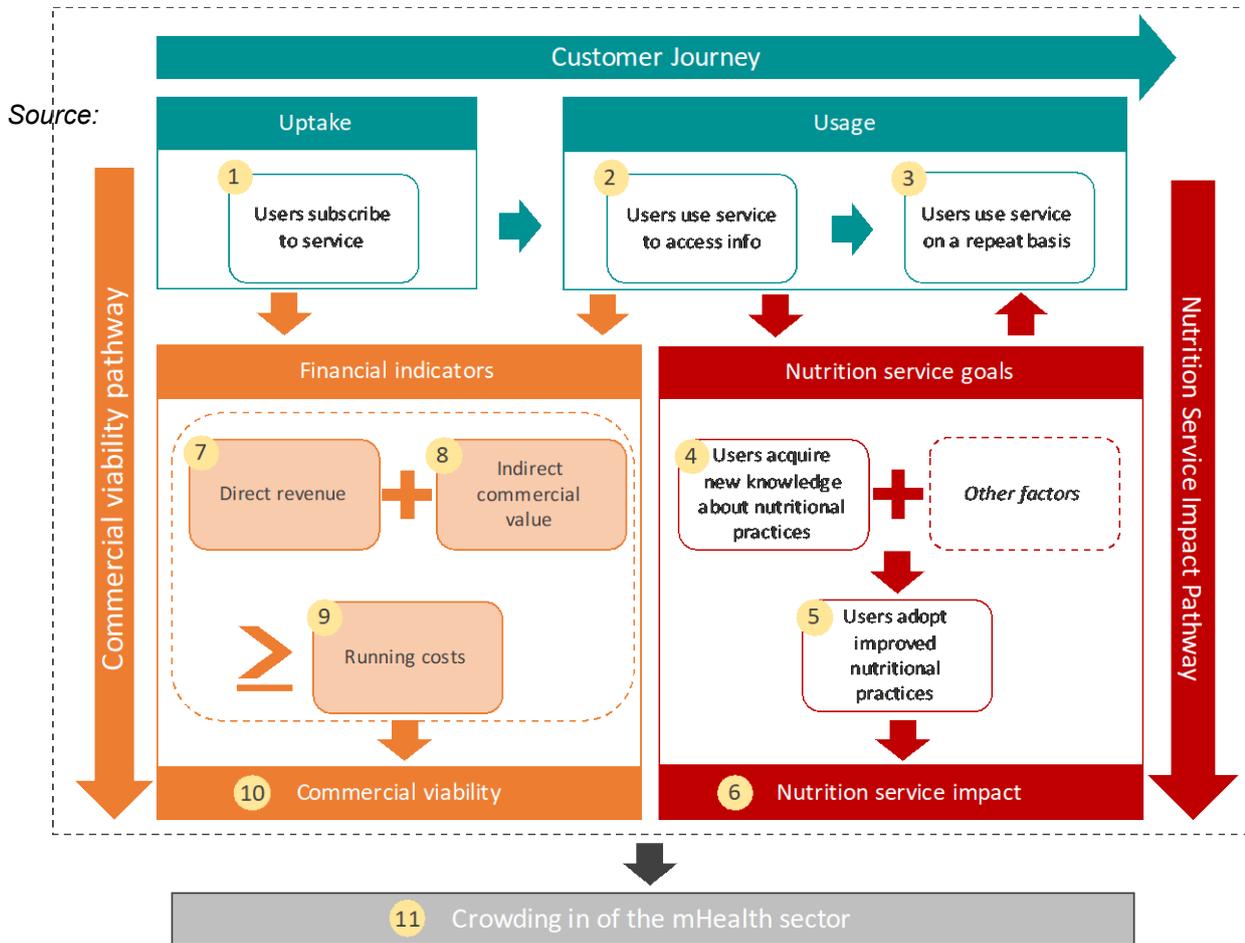
Countries varied with regards to network coverage and access to electricity, with the evaluation sites in Tanzania being better supplied than the sites in Ghana. Additionally, many farmers in Ghana distrusted MNOs, whereas in Tanzania people's attitude towards MNOs was neutral. Technical capacities of the intended users of mNutrition also varied with people in Tanzania being comfortable with reading and receiving SMS text messages, whereas many farmers in Ghana were unsure of how to retrieve a voice message and illiteracy was high. In Tanzania, intended users highlighted that they would be interested in receiving information on nutrition via their mobile phones. In Ghana, intended users said they were interested in agriculture information but less in nutrition information. Overall, Ghana seem to be a slightly more challenging context for the implementation of mNutrition with more contextual barriers that may affect the up-take of the intervention.

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## Annex A GSMA's Theory of Change for mHealth Programme



Source: Draft TOC created for mHealthi programme at programme design stage 2015  
 © GSMA Intelligence (unpublished)

## Annex B Terms of Reference

### Section 4, Annex A

#### Call-down Contract

### Terms of Reference

#### **PO 6420: External evaluation of mobile phone technology based nutrition and agriculture advisory services in Africa and South Asia**

#### **Introduction**

DFID (Research and Evidence Division) wishes to commission an external impact evaluation of mNutrition, a mobile phone technology based nutrition and agricultural advisory service for Africa and South Asia. mNutrition is a programme supported by DFID that, through business and science partnerships, aims to build sustainable business models for the delivery of mobile phone technology based advisory services that are effective in improving nutrition and agricultural outcomes.

mNutrition is primarily designed to use mobile phone-based technologies to increase the access of rural communities to nutrition and agriculture related information. The initiative aims to improve knowledge among rural farming communities especially women and support beneficial behaviour change as well as increasing demand for nutrition and agriculture extension services. The mNutrition initiative launched in September 2013 will work in 10 countries in Africa (Cote d'Ivoire, Ghana, Malawi, Mozambique, Nigeria, Tanzania, Kenya, Rwanda, Uganda, Zambia) and four countries in South Asia (Bangladesh, India, Pakistan and Sri Lanka). The desired impact of mNutrition will be improved nutrition, food security and livelihoods of the poor.

Mobile phone-based services have been endorsed by WHO as an effective strategy for behaviour change and for driving adherence to anti-retroviral treatment protocols (Horvath, Azman, Kennedy and Rutherford 2012). There is currently scant evidence on the impact and cost-effectiveness of mobile phone technology based services for nutrition and agriculture and on the sustainability of different business models for their provision. A rigorous evaluation of mobile phone technology based nutrition services would add significantly to the current evidence base. An external evaluation team managed by the Evaluator, independent of the programme delivery mechanism, will conduct an assessment of the impact, cost-effectiveness and sustainability of mobile phone technology based information and behaviour change messages for nutrition and agriculture.

#### **Background to mNutrition**

##### **Introduction**

Undernutrition is a major challenge to human and economic development globally. It is estimated that almost one billion people face hunger and are unable to get enough food to meet their dietary needs. Agriculture is a major source of livelihood in many poor countries and the sector has a potentially critical role in enhancing health, specifically maternal and child health and nutritional status. A well-developed agriculture sector will deliver increased and diversified farm outputs (crops, livestock, non-food products) and this may enhance food and nutrition security directly through increased access to and consumption of diverse food, or indirectly through greater profits to farmers and national wealth. Better nutrition and health of farmers fosters their agricultural and economic productivity. Current agricultural and health systems and policies are not meeting current and projected future global food, nutrition and health needs.

Despite major investment in agricultural and nutrition research and its uptake and application, there is significant social and geographic inequality in who benefits from these investments. Furthermore, in many developing countries, public extension systems for agriculture, health and nutrition are inefficient, have limited capacity and have a poor track record of delivery, especially in terms of supporting women and girls and the most marginalised populations (Alston, Wyatt, Pardey, Marra, and Chan-Kang 2000; Anderson 2007); IFPRI 2010; Van den Berg and Jiggins 2007).

Several research and mobile network operators (MNOs) are testing a range of information and communication technology (ICT) solutions for improving access to a wide range of information and advisory services. Mobile phone-based technologies are among the most promising ICT strategies, although current initiatives in nutrition are relatively small and fragmented.

### **What is mNutrition?**

Enhancing access to the results of nutrition and agricultural research and development is potentially critical for improving the nutrition, health and livelihoods of smallholders and rural communities. mNutrition will harness the power of mobile phone-based technologies and the private sector to improve access to information on nutrition, health and agricultural practices especially for women and farmers (both male and female). Specifically, mNutrition will initiate new partnerships with business and science to deliver a range of services including:

- An open-access database of nutrition and agriculture messages for use in mobile phone-based communication (for example, information and behaviour change messages on practices and interventions that are known to have a direct impact on nutrition or an indirect impact via for example agriculture);
- A suite of mobile phone-based nutrition and agriculture information, extension and registration services designed to: improve knowledge and generate beneficial behaviour change in nutrition and agriculture; increase demand for nutrition, health and agriculture goods and services; register and identify target populations for support; and, using real-time monitoring, support the conduct of nutrition risk assessments by community health workers.

The impacts of mNutrition are expected to include improved nutrition, food security and livelihoods of the poor, especially women in 10 countries in Africa (Cote d'Ivoire, Ghana, Kenya, Malawi, Mozambique, Nigeria, Rwanda, Tanzania, Uganda and Zambia) and 4 countries in South Asia (Bangladesh, India, Pakistan and Sri Lanka). This impact will result from the increased scale and sustainability of mobile phone-based nutrition and agricultural-based information services, delivered through robust public private partnerships in each country.

mNutrition has two major outcomes. One outcome will be cost-effective, sustainable business models for mobile phone enabled nutrition and agriculture services to 3 million households in 10 countries in Africa and 4 countries in South Asia that can be replicated in other countries. Linked to this outcome, the second outcome will expect these services to result in new knowledge, behaviour change and adoption of new practices in the area of agriculture and nutrition practices among the users of these mobile phone-based services.

These outcomes will be achieved through four outputs:

- Improved access to relevant mobile based health, nutrition and agricultural advisory services for 3 million poor people and community health workers across 10 SSA and 4 Asian countries;
- Launch and scaling of mobile phone-based health, nutrition and agricultural advisory services targeted to poor people and community health workers;
- Generation and dissemination of high quality research and evidence on the impact, cost-effectiveness and sustainability of mobile phone-based advisory services in nutrition and agriculture in South Asia and SSA; and

- Development of locally relevant content for mobile phone technology based agriculture and nutrition services meeting demands from users and community health workers.

In terms of promoting behaviour change and/or adoption of new practices, mNutrition will seek to achieve changes in one or more of the following areas:

- Adoption of new agricultural practices that are nutrition sensitive, improve agricultural productivity and utilise post-harvest technologies
- Changes in nutrition practices in either one or several knowledge domains including improved maternal nutrition practices during pregnancies; infant and young child feeding practice; and micro-nutrient supplementation to children at risk (i.e. Vitamin A, Zinc and Oral Rehydration Solution (ORS)).

mNutrition has started implementation from September 2013. For the 2 countries selected for the impact evaluation (Tanzania and Ghana), mobile network operators and content providers have been identified through a competitive process during the first half of 2014. The MNOs and content providers started developing and launching their services during the 4th quarter of 2014 and early 2015. The mobile phone-based advisory services are expected to run at least till 3rd quarter of 2018.

### **mNutrition Project Coordination**

DFID support to mNutrition will be channelled to GSMA, as well as directly to this associated independent external impact evaluation. GSMA is a global body that represents the interests of over 800 mobile operators. GSMA already works with the major mobile operators across Africa, (including Airtel, MTN, SafariCom/VodaCom) with a collective mobile footprint of more than 67% of total African connections. GSMA has a number of existing development initiatives, including mHealth and mFarmer, that are part of GSMA's Mobile for Development which brings together mobile operator members, the wider mobile industry and the development community to drive commercial mobile services for underserved people in emerging markets. GSMA will provide technical assistance to mobile phone operators, and support new partnerships with content providers to develop and scale up new nutrition and agriculture message services. GSMA will ensure sharing of best practices and promote wider replication and uptake of effective business models.

## **Objective and Main Questions**

The objective of this work is to conduct an external evaluation of the impacts and cost-effectiveness of the nutrition and agriculture advisory services provided by mNutrition compared to alternative advisory services available in the two selected countries (Ghana and Tanzania), with particular attention paid to gender and poverty issues. The impact assessment is required to answer the following questions that relate to impact, cost-effectiveness and commercial viability:

- What are the impacts and cost-effectiveness of mobile phone-based nutrition and agriculture services on nutrition, health and livelihood outcomes, especially among women, children and the extreme poor?
- How effective are mobile phone-based services in reaching, increasing the knowledge, and changing the behaviour, of the specific target groups?
- Has the process of adapting globally agreed messages to local contexts led to content which is relevant to the needs of children, women and poor farmers in their specific context?
- What factors make mobile phone-based services effective in promoting and achieving behaviour change (if observed) leading to improved nutrition and livelihood outcomes?
- How commercially viable are the different business models being employed at country level?
- What lessons can be learned about best practices in the design and implementation of mobile phone-based nutrition services to ensure a) behaviour change and b) continued private sector engagement in different countries?

Further evaluation questions related to other aims of mNutrition will be addressed in at least 1 country (either Ghana and/or Tanzania):

- Are mobile phone-based services a cost-effective way to register and identify at risk populations to target with nutrition support?

- Are mobile phone-based services a cost-effective way for community health workers to improve the quality and timeliness of data surveillance (a core set of nutrition-related indicators)?

The content for the mobile phone-based advisory services will be based on international best practices and widely endorsed protocols (i.e. by the World Health Organisation) and evidence-based nutrition-sensitive agricultural practices identified by international experts. Through an iterative multi-stakeholder process, international and country experts will localise and adapt the content to make it relevant to the specific target audience in the 14 countries. The adapted content and nature of messages is expected to vary across specific target audiences within and across countries. The main purpose of assessing the relevance of the content is not to evaluate the overall health and nutrition content but on how this content has been localised and adapted and to what extent the needs of the specific target groups within their particular context have been met.

In assessing the commercial viability, it is recognised that evaluating the sustainability/long-term financial viability of the mobile phone-based advisory services will be difficult as mobile network operators may not be willing to provide this potentially commercially sensitive information. Therefore, GSMA will provide support through its access to aggregated confidential financial results of the mobile network operators providing the service. GSMA will provide a financial summary report on the commercial viability of the business models without compromising the commercial sensitivity of the data for the mobile network operators. The evaluator will assess and validate commercial sustainability through an analysis of the aggregated information provided by GSMA and additional qualitative business analysis approaches.

The Evaluator has the option of proposing refinements of the existing evaluation questions during the inception phase as part of developing the research protocol. These suggestions will be considered by the Steering Committee and an independent peer review during the review of the research protocol as part of the inception phase.

### **Output**

The output of this work will be new and robust evidence on the impact, cost-effectiveness and commercial viability of mobile phone-based advisory services focusing on nutrition and agriculture delivered by public and private partners, and including the development of robust methodological approaches to impact assessment of phone-based advisory services.

### **Recipient**

The primary recipient of this work will be DFID, with the beneficiaries being GSMA, governments, international agencies, foundations, MNOs and other private companies and civil society involved in policies and programmes in nutrition and agriculture that are aimed at improving nutritional, health and agricultural outcomes. The findings of this impact evaluation are intended as global public goods.

### **Scope and timeline**

The scope of this work is to:

- Develop a research protocol for the external evaluation of mNutrition;
- Design and undertake an external evaluation of mNutrition in two countries: Ghana and Tanzania;
- Contribute to the communication of the learning agenda, evaluation strategy and evaluation results.

The evaluation will be in two of the 14 mNutrition target countries; Ghana and Tanzania. These countries have been selected based on the phased start-up of mNutrition programme activities. The focus and approach in the two respective countries will be different allowing for a comparison of the effectiveness of approaches applied. In Tanzania, mNutrition will focus on mobile phone technology based nutrition and health services and registration and identification of target population. In Ghana, the mobile phone technology will focus on nutrition and agriculture sensitive services.

In terms of coverage in number of people being targeted for these services, in total 3 million people will be reached through mNutrition; including 2 million for nutrition sensitive agriculture advisory messages in 4 Asian and at least 2 African countries and about 1 million beneficiaries for mobile phone-based nutrition services in 10 countries in SSA.

The evaluation contract period will be September 2014 to 31<sup>st</sup> December 2019. The development of the research protocol must be completed by month 4 for review and approval by DFID. Full details on tasks and deliverables are provided in sections below.

### **Statement on the design of the mNutrition evaluation**

The evaluation design is expected to measure the impact, cost-effectiveness and commercial viability of mNutrition, using a mixed methods evaluation design and drawing on evidence from two case study countries and the M&E system of the programme. Overall, the proposed design should ensure that the evidence from the two case study countries has high internal validity and addresses the priority evidence gaps identified in the Business Case. Being able to judge the generalisability/replicability of lessons learned from the programme is of equal importance and so a credible approach to generalization and external validity will be an important component of the overall evaluation design. The final evaluation design and methodology to generate robust evidence will be discussed in detail with DFID and GSMA before implementation.

For assessing cost-effectiveness, the Evaluator will further fine-tune their proposed evaluation approach and outline their expectations in terms of data they will require from implementers. A theory based evaluation design, using mixed methods for evaluating the impact has been proposed. During the inception phase, the Evaluator will put forward a robust evaluation design for the quantitative work, either an experimental or a quasi-experimental method, with a clear outline of the strengths and limitations of the proposed method relative to alternatives. During the inception phase, the Evaluator is also expected to identify clearly what will be the implications of the design for implementers in terms of how the overall programme would be designed and implemented and for evidence to be collected in the programme's monitoring system. The Evaluator will also assess the degree to which it is realistic to assess impacts by early 2019 for a programme where implementation started mid 2015 and, if there are challenges, how these would be managed.

The Evaluator, in its 6 monthly reports, will be required to provide information to feed into the DFID Annual Review and Project Completion Report of mNutrition.

## **Gender and inclusiveness**

The impact evaluation will pay particular attention to gender and other forms of social differentiation and poverty issues. From current experiences, it is clear that access to and use of mobile services is differentiated along a range of factors, including gender, poverty, geographic marginalisation, education and illiteracy levels. Therefore, the impact evaluation will look at and analyse differentiated access to and potential utilisation of mobile phone-based services for improved nutrition and agricultural production. Based on the findings, it will identify opportunities and challenges in having an impact on women in general and more specifically the poor and the marginalised.

## **Tasks**

The Evaluator will perform the following tasks:

### **A. Finalise a coherent and robust evaluation approach and methodology based on their proposal (inception phase)**

- Conduct landscape analysis of existing experiences in mobile phone-based services for nutrition and agriculture based on available publications and grey project documents to identify additional critical lessons and priorities for evidence gathering and programme design and implementation;

- Ensure that gender issues and poverty issues are well integrated into the impact evaluation design;
- Develop robust sampling frameworks, core set of indicators and research protocols that allow the consistent measurement and comparison of impacts across study countries, taking into account differences in business models and programmes as needed;
- Work closely with mNutrition programme team in GSMA to familiarise them with impact assessment methodology, discuss evaluation approaches, identify and agree on data provided by programme monitoring system and possible modifications to design;
- Identify risks to the evaluation meeting its objectives and how these risks will be effectively managed;
- Review existing evaluation questions and if deemed relevant propose refinement of existing questions and/or add other questions;
- Prepare a research protocol, including an updated workplan, project milestones and budget. The research protocol will be subject to an independent peer review organised by DFID; and
- Develop a communication plan.

#### **B. Implement and analyse evaluations of impact, cost-effectiveness and commercial viability in accordance with established best practices**

- Based upon the agreed evaluation framework, develop and test appropriate evaluation instruments which are likely to include data collection forms for households, community health workers, service providers including health and agricultural services, content providers and private sector stakeholders including mobile network operators. Instruments will involve both quantitative and qualitative methods;
- Register studies on appropriate open access study registries and publish protocols of studies where appropriate;
- Conduct baselines and end-lines, qualitative assessments and business model assessments in both of the two impact evaluation countries;
- Conduct and analyse the evaluations and present findings in two well-structured reports addressing the evaluation questions. The reports should follow standard reporting guidelines as defined by, for example, the Equator Network. Primary findings should be clearly presented along with a detailed analysis of the underlying reasons why the desired outcomes were/were not achieved;
- The Evaluating Organisation or Consortium may sub-contract the administration of surveys and data entry, but not the supervision of those tasks, study design, or data analysis; and
- The country-specific mixed methods evaluation reports, cost effectiveness and business models studies and final evaluation report will be subject to an independent peer review organised by DFID.

#### **C. Contribute to the communication of the learning agenda, impact evaluation strategy, and evaluation results.**

- Develop a communication plan outlining the main outputs and key audiences;
- Conduct lessons learnt workshops in each of the 2 impact evaluation countries and key dissemination events; and
- Assist in communicating the results of the evaluation and contribute to the development and communication of lessons learnt about mobile phone-based extension approaches in nutrition and agriculture.

### **Deliverables**

The Evaluator will deliver the following outputs<sup>16</sup>:

During the design and study inception phase of maximum 4 months:

- A publishable landscape analysis report highlighting lessons learnt from existing initiatives on mobile phone-based advisory services related to nutrition and agriculture by month 4;

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<sup>16</sup> The exact timeframe of deliverables will be agreed upon during the design phase as appropriate.

- A updated work plan with project milestones and budget by end of month 1 (possibly adjusted based on the approved research protocol by month 4);
- A communication plan outlining the key outputs, audience and timeline for review and approval by month 4; and
- A full research protocol by month 4 for review and approval. The research protocol should be registered with appropriate open access study registries;

#### Interim reports:

- 4 biannual progress reports for the External Evaluation as a whole, and for each country evaluation, against milestones set out in the workplan;
  - Two desk reviews submitted by June 2016
  - Two Baseline quantitative reports submitted by April 2017
  - Two Baseline qualitative reports submitted by February 2017
  - Two Cost-effectiveness reports 1 submitted by March 2017
  - Two Business Model reports 1 submitted by March 2017
  - Two Mixed Methods Baseline reports completed by September 2017
  - Two Midline qualitative reports submitted by March 2018
- All survey data collected during the evaluation provided in a suitable format to DFID for public release.

#### At project's end:

- Two Endline quantitative reports submitted by June 2019
- Two Endline qualitative reports submitted by August 2019
- Two Cost-effectiveness report 2 submitted by July 2019
- Two Business Model report 2 submitted by July 2019
- Two Evaluation reports submitted by October 2019
- At least 1 article, based on the findings from the country evaluation reports, published in a research journal;
- A shared lesson learnt paper published and at least one presentation highlighting key lessons for similar initiatives of promoting mobile based technologies for providing extension services and the promotion of uptake of technologies by December 2019.

Research protocol and all final reports will be independently peer reviewed. This will be organised by DFID. Outputs are expected to be of sufficiently quality so that a synthesis of findings can be published in a leading peer-reviewed journal.

## Coordination and reporting requirements

A mNutrition Advisory Group (AG) will be established for the programme which will a) provide technical oversight and b) maximise the effectiveness of the programme. The Advisory Group will meet on a bi-annual basis and comprises of representatives of DFID, NORAD and GSMA representatives and independent technical experts. The Evaluator will be managed by DFID on behalf of the mNutrition Advisory Group. The Evaluator will work closely with the mNutrition programme team in GSMA and its specific country implementing partners. The Evaluator will:

- Ensure coherence and lesson learning across all pilot impact assessments on the key evaluation questions and indicators identified.
- Incorporate a clear code of ethics; incorporate plans for open access publications and public access to data sets.

The Evaluator will work closely with the mNutrition project management team, in particular in the design of the overall evaluation framework and the evaluation plan for the specific project components and the countries selected for the evaluation. Collaboration and regular communication between Evaluator and mNutrition project management team and implementing partners in selected case study countries is crucial

as the evaluation design may have implications for project implementation and vice versa. The mNutrition project management team will lend support in communication as requested by the Evaluator or the Advisory Group. The Evaluator will report directly to DFID who will manage the evaluation on behalf of the mNutrition Advisory Group. The main point of contact for technical matters is Louise Horner, Livelihoods Adviser and Hugh McGhie, Deputy Programme Manager for all other project related issues. The mNutrition Advisory Group will be the arbiter of any disputes between the evaluation function and the overall programme implementation.

At the end of each 6 months, the Evaluator will submit a brief report outlining key achievements against the agreed deliverables. Pre-agreed funding will then be released provided that deliverables have been achieved.

In addition to the 6 monthly reports outlined above, the Evaluator will provide information to feed into the DFID Annual Review of mNutrition. The 6 monthly reports will be a key source of information used to undertake the Annual Review and Project Completion Report for the programme. These reviews will be led by the Livelihoods Adviser and Deputy Programme Manager, in consultation with the mNutrition AG. All reviews will be made available publicly in line with HMG Transparency and Accountability Requirements.

Mandatory financial reports include an annual forecast of expenditure (the budget) disaggregated monthly in accordance with DFID's financial year April to March. This should be updated at least every quarter and any significant deviations from the forecast notified to DFID immediately. In addition the Evaluator will be required to provide annual audited statements for the duration of the contract.

## **Contractual Arrangements**

The contract starts in September 2014 and will run till end of December 2019 subject to satisfactory performance as determined through DFID's Annual Review process. Progression is subject to the outcome of this review, strong performance and agreement to any revised work plans or budgets (if revisions are deemed appropriate).

A formal break clause in the contract is included at the end of the inception period. Progression to the implementation phase will be dependent on strong performance by the Evaluator during the inception period and delivery of all inception outputs, including a revised proposal for implementation period. Costs for implementation are expected to remain in line with what has been agreed upon for this contract, with costs such as fee rates fixed for contract duration. DFID reserves the right to terminate the contract after the inception phase if it cannot reach agreement on the activities, staffing, budget and timelines for the implementation phase.

DFID reserves the right to scale back or discontinue this assignment at any point (in line with our Terms and Conditions) if it is not achieving the results anticipated. The Evaluator will be remunerated on a milestone payment basis. DFID has agreed an output based payment plan for this contract, where payment will be explicitly linked to the Evaluator's performance and effective delivery of programme outputs as set out in the ToR and approved workplan. The payment plan for the implementation phase will be finalised during the inception period.

### **Open Access**

The Evaluator will comply with DFID's Enhanced and [Open Access Policy](#). Where appropriate the costs of complying with our open access policy should be clearly identified within your commercial proposal.

### **Branding**

The public has an expectation and right to know what is funded with public money. It is expected that all research outputs will acknowledge DFID support in a way that is clear, explicit and which fully complies with DFID Branding Guidance. This will include ensuring that all publications acknowledge DFID's support. If press

releases on work which arises wholly or mainly from the project are planned this should be in collaboration with DFID's Communications Department.

### **Duty of Care**

The Evaluator is responsible for the safety and well-being of their Personnel (as defined in Section 2 of the Contract) and Third Parties affected by their activities under this contract, including appropriate security arrangements. The Evaluator is responsible for the provision of suitable security arrangements for their domestic and business property. DFID will share available information with the Evaluator on security status and developments in-country where appropriate.

The Evaluator is responsible for ensuring appropriate safety and security briefings for all of their Personnel working under this contract and ensuring that their Personnel register and receive briefing as outlined above. Travel advice is also available on the FCO website and the Evaluator must ensure they (and their Personnel) are up to date with the latest position.

The Evaluator has confirmed that:

- The Evaluator fully accepts responsibility for Security and Duty of Care.
- The Evaluator understands the potential risks and have the knowledge and experience to develop an effective risk plan.
- The Evaluator has the capability to manage their Duty of Care responsibilities throughout the life of the contract.

## Annex C Timeline for the mNutrition impact evaluation

ACTIVITY	2016					2017					2018					2019												
	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D
<b>QUANTITATIVE COMPONENT</b>																												
Baseline survey																												
Endline survey																												
<b>QUALITATIVE COMPONENT</b>																												
Baseline data collection																												
Midline data collection																												
Endline data collection																												
<b>BUSINESS MODEL &amp; COST EFFECTIVENESS COMPONENT</b>																												
Phase 1 stakeholder interviews & data collection																												
Phase 2 stakeholder interviews & data collection																												
<b>MIXED METHODS</b>																												
Mixed methods report																												
Mixed methods final report																												

## Annex D Topic guides

### Topic guide for in-depth interview with pregnant women

**Purpose:**

- Understand current information seeking behaviour and practices related to maternal and child nutrition
- Explore acceptability, familiarity and use of mobile phones
- Understand barriers to the use of mobile phones
- Gain insights into barriers to the reading and acting on mobile phone-based messages
- If this isn't her first child, try and also explore whether her knowledge and practice of child feeding has evolved over time

#### 1. Warm-up

*Small talk – build a rapport*

#### 2. Nutrition information seeking

*Say that you would now like to speak a little about nutrition*

**Mwambie kwamba ungependa kuzungumza kwa ufupi kuhusu lishe**

**1. What do you and your family usually eat on a typical day?**

**Kwa kawaida wewe na familia yako huwa mnakula nini?**

- Do ask whether she eats differently because she is pregnant? Why? (e.g. food taboo, nausea, do not want the baby to get too big)
- **Uliza kama ulaji wake umebadilika kutokana na ujauzito? Ni kwanini? (Mf. Miiko kuhusu chakula, kichefuchefu, kutotaka kuzaa mtoto mkubwa)**

**2. In your opinion, what makes a good diet? Why? (Knowledge/get details!)**

**Kwa mtazamo wako, chakula bora ni kipi?**

- Prompt: What types of foods
- **Dadisi: Ni aina gani za vyakula**
- Number of meals a person has per day
- **Idadi ya milo kwa siku**
- Size of portion per meal
- **Kiasi cha chakula kwa kila mlo**
- Differences between good diet for men/women, pregnant and adults/children (if same food, is it cut in smaller pieces for children, or mashed, or less spicy)

- Utofauti wa chakula bora kwa wanaume/wanawake, wajawazito na watu wazima/watoto (kama ni chakula hicho, je hukakwa vipande vidogo kwa ajili ya watoto au kupondwapondwa au kupunguzwa viungo)
- What do you value in a diet (quantity of food? Quality of food? Type of food?) Why?
- Ni vitu gani unathamini katika lishe? (wingi wa chakula? Ubora wa chakula? Aina ya chakula? Kwanini?)

**3. Would you describe your own/your household's diet as a good diet? Why? Why not? (Practice)**

**Je, unafikiri kwamba mlo wako/mlo wa kaya yenu ni bora? Ni kwanini? Ni kwanini sio? (Practice)**

- Reasons for not having a good diet - Choice, barriers, preference, taste (e.g. don't have money to buy food, limited access to food, they have no influence on what type of food is purchased as somebody else buys the food, forget to apply knowledge)?

Sababu za kutokuwa na mlo bora: Uchaguzi, vikwazo, upendeleo, Ladha, (Mfano, kutokuwa na hela ya kununua chakula, ugumu katika upatikanaji wa vyakula, kutokuwa na maamuzi juu ya ununuzi wa vyakula kwasababu mtu mwingine ananunua chakula, kusahau kutumia uelewa)?

- Think about different meals during the day

Fikiria mlo tofauti kwa siku.

**4. Has anybody ever given you advice on how to eat well during pregnancy? Or did you get advice from somewhere else (radio, TV)? (Information sources)**

**Je, kuna yeyote ambaye amewahi kukupa ushauri juu ya ulaji mzuri wakati wa ujauzito? (vyanzo vya taarifa)**

- Who (e.g. health worker, family, village elder)?
- Ni nani (mfano mhudumu wa afya, mwanafamilia, mwanakijiji mwingine)
- What (foods to eat/not eat during pregnancy)?
- Nini (vitvu vya kula/kutokula wakati wa ujauzito)
- Did you follow the advice? Why?/Why not
- Je, ulifuata ushauri uliopewa? Ni kwanini?/Kwanini hapana
- Whose advice on eating well during pregnancy do you trust and value? Why? (e.g. government, NGO, family members)
- Je, ni ushauri wa nani unaouamini na kuthamini kuhusu ulaji bora wakati wa ujauzito? Ni kwanini? (mfano. Serikali, Asasi zisizo kuwa za kiserikali, wanafamilia.
- Have you received any advice that you don't trust or value? Why don't you trust this advice?
- Je, umewahi kupata ushauri ambao huuamini au kuuthamini? Kwanini hukuamini ushauri huo?
- Was it useful? Why?/Why not?
- Je, ulikuwa na manufaa? Kwanini? Kwanini hapana?
- How could it be made more useful? What would you like to know?

Ni kwa jinsi gani unaweza kuwa wa manufaa zaidi? Ungependa kujua nini?

*Explain that you previously asked about them and would now like to ask some questions specifically about feeding and caring for babies and small children.*

Elezea kwamba umetoka kuuliza kuhusu wao na sasa ungependa kuuliza maswali maalumu kuhusu ulishaji na utunzaji wa watoto.

**5. What do you think is important for babies to eat to stay healthy and grow well? What do you plan to do? Why? (Knowledge, beliefs)**

**Ni kitu gani unafikiri ni muhimu kwa watoto kula ili kuwa na afya na ukuaji mzuri? Una mpango wa kufanya nini? Ni kwanini (uelewa, Imani)**

- What is the first food a baby should get after delivery and why? And when? (Breastfeeding, colostrum, other food or drinks as first food, and when and why? (e.g. due to problems breastfeeding or beliefs))
- Ni chakula gani cha mwanzo mtoto anatakiwa kupewa baada ya kuzaliwa na kwanini? Na wakati gani? (Kunyonyesha, dang'a-maziwa ya mwanzo ya njano, aina nyingine ya chakula au vinywaji kama chakula cha mwanzo, wakati gani na kwanini? (mfano; kutokana na matatizo ya unyonyeshaji au Imani)
- In the first 6 months after birth? (breastfeeding; whether they believe a baby needs other food/drink)  
Miezi sita ya mwanzo baada ya kujifungua, (kunyonyesha; kama anaamini mtoto anahitaji vyakula/vinywaji vingine)
- In the first year of life? (ask about the age at which the baby needs to get food and drinks other than breast milk; type of food)
- Ndani ya mwaka mmoja? (uliza kuhusu umri ambao mtoto anatakiwa aanze kupata chakula na vinywaji vingine tofauti na maziwa ya mama; aina ya chakula.

**6. Has anybody ever given you guidance on how to feed a baby?**

**Je, kuna mtu yeyote amewahi kukupa maelekezo juu ya ulishaji wa mtoto?**

- Who (e.g. health worker, family member, village elder)?
- Nani, (mfano muhudumu wa afya, mwanafamilia, mwanakijiji mwingine?)
- What (breastfeeding, bottle/cup feeding, type of foods (ask about age of child)
- Nini (Unyonyeshaji, Ulishaji kwa kutumia chuchu ya chupa/kikombe, aina ya vyakula (uliza kuhusu umri wa mtoto)?)
- Would you/did you follow the advice? Why?/Why not
- Je utafuata/ulifuata ushauri huo? Kwanini? Kwanini hapana
- Whose advice on feeding baby do you/would you trust and value? Why? (e.g. government, NGO, family members)
- Je, ni ushauri wa nani unaouamini/ungeuamini na kuuthamini kuhusu ulishaji wa mtoto? Ni kwanini? (mfano. Serikali, Asasi zisizo kuwa za kiserikali, wanafamilia).
- Was it useful? Why/why not?
- Je, ulikuwa na manufaa? Kwanini?/Kwanini hapana?

- How could it be made more useful? What would you like to know?
- **Ni kwa jinsi gani unaweza kuwa wa manufaa zaidi? Ungependa kujua nini?**
- Have you received any advice that you don't trust or value? Why don't you trust this advice?
- **Je umepokea ushauri wowote usiouamini au kuuthamini? Kwanini huuamini huu ushauri?**

**7. When you have any questions or concerns about how to feed and care for your baby what would you do/did you do?**

**Ukiwa na maswali au dukuduku kuhusu ulishaji na malezi ya mtoto, Je ungefanya nini/ulifanya nini?**

- Type of concerns
- **Aina ya dukuduku**
- Who would you ask?
- **Je, ungemuuliza nani?**
- Who did you trust? Why?
- **Je, ulimuamini nani? Kwanini?**

**3. Acceptability, familiarity and use of mobile phone**

*We discussed a lot about diets and how you get information. We now want to speak about mobile phones and how they might help you to get access to information about nutrition.*

**8. Tell me a little bit about your mobile phone/the mobile phones you have access to in your household?**

**Tafadhali nieleze kwa ufupi juu ya simu yako ya mkononi au simu unayoweza kutumia ndani ya kaya yenu.**

- Do you share the phone or SIM card? How does this work? When do you have access?
- **Je, unatumia simu au laini pamoja na mtu mwingine? unaitumiaje? Wewe unaitumia wakati gani?**
- What do you use it for? (voice calls, SMS, internet, WhatsApp, Facebook)
- **Kwa matumizi gani? (kupiga simu, Meseji, Mtandao wa intaneti, Mitandao ya kijamii kama whatsapp, facebook)**
- What you like best?
- **Ni kipi unakipenda zaidi?**
- How often do you use it?
- **Ni mara ngapi unaitumia?**
- What times of the day do you usually use/have access to the phone?
- **Ni muda gani kwa siku unatumia simu?**
- Do you use different SIM cards? Why? How do you decide when to use what SIM card? Do you share SIM cards?
- **Je, unatumia line zaidi ya moja? Ni kwanini? Je unaamua juu ya aina gani ya line ya kutumia? Je unatumia line hii zaidi ya mtu mmoja?**

**9. Have you ever used the mobile phone to get information on health or nutrition? Please explain?**

**Je umewahi kupata taarifa za afya au lishe kupitia simu ya mkononi? Tafadhali elezea?**

- What information?
- **Ni taarifa gani?**
- How? (e.g. automate messages)
- **Kivipi?(Mfano;Meseji za moja kwa moja (automatic sms)**
- Contact the health worker, arrange an appointment, call relative/friends in health emergencies/labour, etc.?

**Kuwasiliana na muhudum wa afya, kupanga miadi (appointment), kumpigia ndugu/rafiki wakati wa dharura inayohusu afya/uchungu, n.k.**

**10. Have you ever received automated message with health information for yourself or your family? (If they have not, ask hypothetically how they would feel about it) (Perceptions/trust of automated SMS on health)**

**Je umewahi kupokea meseji za moja kwa moja (automated) zenye taarifa za afya kwa ajili yako au familia? (kama haujapokea, uliza angejisikiaje kuzipokea) (mtazamo/kuamini meseji za moja kwa moja (automated) kuhusu afya**

- From whom? (government, NGO, company)
- **Kutoka kwa nani? (Serikali, Asasi zisizo za kiserikali, Kampuni)**
- Feeling about automated messages
- **Unajisikiaje unapopokea meseji za aina hiyo**
- Perceived as useful, why? Why not?
- **Unazichukulia kama zina umuhimu? Kwanini? Kwanini hapana?**
- Trust in information, Why/Why not? What makes information trust worthy?
- **Kuamini taarifa, kwa nini/kwanini hapana? Je, ni nini kinafanya taarifa hiyo iwe ya kuaminika?**
- Influence whether you perceive the messages as useful (e.g. who sends it/where information comes from, personalised to individual situation, frequency, best time to receive the message during the day)
- **Vitu gani vinakushawishi kuona meseji hizi ni za muhimu (mfano: mtumaji/taarifa zinapotoka, inayokuhusu moja kwa moja, kwa kujirudia rudia, muda muafaka wa kupokea meseji.**
- Are there other channels for information you would prefer? (radio, TV?)
- **Je kuna vyanzo vingine vya taarifa ambavyo ungependelea? (radio, televisheni)**

**11. Have you ever received automated SMS messages with other information (e.g. agriculture)?**

**Je, umewahi kupokea ujumbe wa moja kwa moja (automated sms) yenye taarifa zingine tofauti na afya na lishe (mfano. Kilimo)?**

- What did you think of this/Feeling about it. Why?
- **Ulifikiriaje kuhusu hili/unajisikiaje unapopokea meseji za aina hiyo**
- *(If they have received such messages, use prompts from 10)*
- **Kama wamepokea hizo meseji, tumia prompti namba 10)**

**12. Do you like receiving SMS? Why?**

**Je, unapenda kupokea ujumbe mfupi wa maneno (meseji)? Ni kwanini**

- Readability, literacy, screen size, does somebody read it to you?

- Usomekaji, uelewa, ukubwa wa kioo cha simu, Je kuna mtu anakusomea
- Do you like sending sms? Why?
- Je unapenda kutuma meseji? Kwanini?
- How many promotional sms do you get? What do you do with them (read/delete)?
- Je, unapokea meseji za promosheni ngapi? Unazifanyia nini? (kuzisoma/kuzifuta)
- Does your inbox sometimes get so full that you cannot receive new messages?
- Je, kuna muda simu yako inajaa meseji kiasi cha kushindwa kupokea meseji mpya?

**13. What is your opinion of the mobile network you use? (Trust in company)**  
**Je, nini mtazamo wako juu ya mtandao wa simu unaotumia? (Imani juu kampuni)**

- Reason: costs, promotion, coverage,
- Sababu: Gharama, promosheni, upatikanaji
- Prompt: if conversation isn't flowing discuss in comparison to other networks
- Dadisi: Kama majadiliano hayaendi katika mtiririko jadili kwa kulinganisha na mitandao mingine)
- What do you like/don't like about them?
- Je, unapenda/hupendi nini juu ya mtandao huu?
- How much of a problem is SMS spam (e.g. promotion)?
- Ni kwa kiasi gani kumekua na shida katika upokeaji wa meseji taka?

**14. Do you experience any problems using your mobile phone? (Details)**

**Je, unapata tatizo lolote katika utumiaji wa simu yako ya mkononi? (Maelezo)**

- Access to electricity, money to top up, where to top up, network coverage. What do you do? Who do you ask for help?
- Upatikanaji wa umeme, pesa ya vocha, sehemu ya kupata vocha, upatikanaji wa mtandao. Huwa unafanya nini? Unamuomba nani msaada?
- Technical problems with phone (battery life) - What do you do? Who do you ask for help?
- Matatizo ya simu ya kiufundi (batri kuharibika/kuchoka)- Huwa unafanya nini? Unamuomba nani msaada?
- Problems with phone functions (technology literacy) - What do you do? Who do you ask for help?
- Matatizo juu ya utumiaji wa simu (ufahamu wa kitechnologia)- Huwa unafanya nini? Unamuomba nani msaada?
- Limited access to phone (when phone is shared) - What do you do? Who do you ask for help?
- Ugumu katika upatikanaji wa simu (kama simu inatumiwa na mtu zaidi ya mmoja)- Huwa unafanya nini? Unamuomba nani msaada?

**Thank you. Do you have any questions?**

**Asante sana. Je una swali lolote?**

## Topic guide for in-depth interview with mothers with young children

### **Purpose:**

- Understand current information seeking behaviour and practices related to child and maternal nutrition
- Explore acceptability, familiarity and use of mobile phone technology
- Understand barriers to the use of mobile phone technology
- Gain insights into barriers to the reading and acting on mobile phone-based messages

### 1. Warm-up questions

*How many children do you have? How old are they? Do you have boys and/or girls?*

### 2. Nutrition information seeking

*Say that you would now like to speak a little bit about nutrition*

#### 1. What do you and your family usually eat on a typical day?

**Kwa kawaida wewe na familia yako huwa mnakula nini?**

#### 2. In your opinion, what makes a good diet? Why? (Knowledge/get details!)

**Kwa mtazamo wako, chakula bora ni kipi?**

- Prompt: What types of foods
- **Dadisi: Ni aina gani za vyakula**
- Number of meals a person has per day
- **Idadi ya milo kwa siku**
- Size of portion per meal
- **Kiasi cha chakula kwa kila mlo**
- Differences between good diet for men/women, pregnant and adults/children (if same food, is it cut in smaller pieces for children, or mashed, or less spicy)
- **Utofauti wa chakula bora kati ya wanaume/wanawake, wajawazito na watu wazima/watoto (kama ni chakula hicho, je hukatwa vipande vidogo kwa ajili ya watoto au kupondwapondwa au kupunguzwa viungo)**
- What do you value in a diet (quantity of food? Quality of food? Type of food?) Why?
- **Ni vitu gani unathamini katika lishe? (wingi wa chakula? Ubora wa chakula? Aina ya chakula? Kwanini?)**

**3. Would you describe your own/your household's diet as a good diet? Why? Why not? (Practice)**

**Je, unafikiri kwamba mlo wako/mlo wa kaya yenu ni bora? Ni kwanin? Ni kwanini hapana? (Practice)**

- Reasons for not having a good diet - Choice, barriers, preference, taste (e.g. don't have money to buy food, limited access to food, they have no influence on what type of food is purchased as somebody else buys the food, forget to apply knowledge)?

Sababu za kutokuwa na mlo bora: Uchaguzi, vikwazo, upendeleo, Ladha, (Mfano, kutokuwa na hela ya kununua chakula, ugumu katika upatikanaji wa vyakula, kutokuwa na maamuzi juu ya ununuzi wa vyakula kwasababu mtu mwingine ananunua chakula, kusahau kutumia uelewa)?

- Think about different meals during the day

Fikiria milo tofauti kwa siku.

**4. Has anybody ever given you advice on how to feed your child well? Or did you get advice from somewhere else (radio, TV)? (information sources)**

**Je, kuna yeyote ambaye amewahi kukupa ushauri juu ya ulishaji mzuri wa mtoto au ulipata ushauri sehemu nyingine (radio, Tv)? (vyanzo vya taarifa)**

- Who (e.g. health worker, family, village elder)?
- Ni nani (mfano mhudumu wa afya, mwanafamilia, mwanakijiji mwingine)
- What (foods to eat for health, breastfeeding)?
- Nini (vitu vya kula kwa afya, unyonyeshaji)?
- Did you follow the advice? Why?/Why not
- Je, ulifuata ushauri uliopewa? Ni kwanini?/Kwanini hapana
- Whose advice on child feeding do you trust and value? Why? (e.g. government, NGO, family members)
- Je, ni ushauri wa nani unaouamini na kuthamini kuhusu ulishaji wa mtoto? Ni kwanini? (mfano. Serikali, Asasi zisizo kuwa za kiserikali, wanafamilia.
- Have you received any advice that you don't trust or value? Why don't you trust this advice?
- Je, umewahi kupata ushauri ambao huuamini au kuuthamini? Kwanini hukuamini ushauri huo?
- Was it useful? Why?/Why not?
- Je, ulikuwa na manufaa? Kwanini? Kwanini hapana?
- How could it be made more useful? What would you like to know?  
Ni kwa jinsi gani unaweza kuwa wa manufaa zaidi? Ungependa kujua nini?

**5. What do you think is important for babies to stay healthy and grow well? Why? (knowledge, beliefs, practice)**

**Ni kitu gani unafikiri ni muhimu kwa watoto ili kuwa na afya na ukuaji mzuri? Ni kwanini (uelewa, Imani, vitendo)**

- What is the first food a baby should get after delivery and why? And when? (Breastfeeding, colostrum, other food or drinks as first food, and when and why? (e.g. due to problems breastfeeding or beliefs))
- Ni chakula gani cha mwanzo mtoto anatakiwa kupewa baada ya kuzaliwa na kwanini? Na wakati gani? (Kunyonyesha, dang'a-maziwa ya mwanzo ya njano, aina nyingine ya chakula au vinywaji kama chakula cha mwanzo, wakati gani na kwanini? (mfano; kutokana na matatizo ya unyonyeshaji au Imani)
- What did you do? Why?
- Ulifanyaje? Kwanini?
- In the first 6 months after birth? (breastfeeding; whether they believe a baby needs other food/drink)  
Miezi sita ya mwanzo baada ya kujifungua, (kunyonyesha; kama anaamini mtoto anahitaji vyakula/vinywaji vingine)
- In the first year of life? (ask about the age at which the baby needs to get food and drinks other than breast milk; type of food)
- Ndani ya mwaka mmoja? (uliza kuhusu umri ambao mtoto anatakiwa aanze kupata chakula na vinywaji vingine tofauti na maziwa ya mama; aina ya chakula.
- If she talks about the special mixture porridge (e.g. maize, grains, groundnuts), ask how she prepares it (especially if she has little money and only use 1 grain rather than mixture), how store, how feed?
- Kama atazungumzia kuhusu mchanganyiko maalum wa uji (mfano; mahindi, nafaka, karanga) uliza jinsi anavyoandaa (hasa kama ana pesa kidogo na anatomia aina moja ya nafaka kuliko mchanganyiko), anavyotunza, anavyolisha
- What did you do? Why?
- Ulifanya nini? Kwanini
- What foods/drinks did you give your child/ren now? Why? (e.g. they like it, healthy for them, food household eats)
- Ni vyakula/vinywaji gani umempa/kuwapa mtoto/watoto wako sasa? Kwanini? (mfano; wamevipenda, ni vizuri kwa afya, chakula kinacholiwa na kaya)

**6. When you have any questions or concerns about how to feed your children what would you do/did you do?**

**Ukiwa na maswali au dukuduku kuhusu ulishaji wa watoto, Je, ungefanya nini/ulifanya nini?**

- Type of concerns
- Aina ya dukuduku
- Who would you ask?
- Je, ungemuuliza nani?
- Who did you trust? Why?
- Je, ulimuamini nani? Kwanini?

**3. Acceptability, familiarity and use of mobile phone**

*We discussed a lot about diets and how you get information. We now want to speak about mobile phones and how they might help you to get access to information about nutrition.*

**7. Tell me a little about your mobile phone/the mobile phones you have access to in your household?**

**Tafadhali nieleze kwa ufupi juu ya simu yako ya mkononi au simu unayoweza kutumia ndani ya kaya yako.**

- Do you share it? How does this work? When do you have access?
- Je, unatumia simu pamoja na mtu mwingine? unafanyaje? Wewe unaitumia wakati gani?
- What do you use it for? (voice calls, SMS, internet, WhatsApp, Facebook) What you like best?
- Kwa matumizi gani? (kupiga simu, Meseji, Mtandao wa intaneti, Mitandao ya kijamii kama whatsapp, facebook) Ni kipi unakipenda zaidi?
- How often?
- Ni mara ngapi unaitumia?
- What times of the day do you usually use/have access to the phone?
- Ni muda gani kwa siku unatumia simu?
- Do you use different SIM cards? Why? How do you decide when to use what SIM card? Do you share SIM cards?
- Je, unatumia line zaidi ya moja? Ni kwanini? Je unaamuaje juu ya aina gani ya line ya kutumia? Je unatumia line hii zaidi ya mtu mmoja?

**8. Have you ever used the mobile phone to get information on health or nutrition? Please explain?**

**Je umewahi kupata taarifa za afya au lishe kupitia simu ya mkononi? Tafadhali elezea?**

- What information?(e.g; breast feeding, illness, medication)
- Ni taarifa gani? (Mfano; Unyonyeshaji, ugonjwa, matibabu)
- How? (e.g. automate messages)
- Kivipi? (Mfano;Meseji za moja kwa moja (automatic sms)
- Contact the health worker, arrange an appointment, call relative/friends in health emergencies/labour, etc.?  
Kuwasiliana na muhudum wa afya, kupanga miadi (appointment), kumpigia ndugu/rafiki wakati wa dharura inayohusu afya/uchungu, n.k.

**9. Have you ever received automated message with health information for yourself or your family? (If they have not, ask hypothetically how they would feel about it)**  
(Perceptions/trust of automated SMS on health)

**Je umewahi kupokea meseji za moja kwa moja (automated) zenye taarifa za afya kwa ajili yako au familia? (kama hajapokea, uliza angejisikiaje kuzipokea)**  
(mitazamo/kuamini meseji za moja kwa moja (automated) kuhusu afya)

- From whom? (government, NGO, Company)
- Kutoka kwa nani? (Serikali, Asasi zisizo za kiserikali, kampuni)
- Feeling about automated messages
- Unajisikiaje kuhusu meseji za moja kwa moja(automated)
- How did you/would you feel about automated messages?

- **Ulifanyaje/Ungejisikiaje kuhusu meseji za moja kwa moja?**
- Perceived as useful, why? Why not?
- **Unazichukulia kama zina umuhimu? Kwanini? Kwanini hapana?**
- Trust in information, Why/Why not? What makes information trustworthy?
- **Kuamini taarifa, kwa nini/kwanini hapana? Je, ni nini kinafanya taarifa hiyo iwe yakuaminika?**
- Influence whether you perceive the messages as useful (e.g. who sends it/where information comes from, personalised to individual situation, frequency, best time to receive the message during the day)
- **Kitu gani kinakushawishi kuona meseji hizi ni za muhimu (mfano: mtumaji/taarifa zinapotoka, inayokuhusu moja kwa moja, kwa kujirudia rudia, muda muafaka wa kupokea meseji.**
- Are there other channels for information you would prefer? (Radio, TV?)
- **Je kuna vyanzo vingine vya taarifa ambavyo ungependelea? (redio, televisheni)**

**10. Have you ever received automated SMS messages with other information (e.g. agriculture)?**

**Je, umewahi kupokea ujumbe wa moja kwa moja (automated sms) yenye taarifa zingine (mfano. Kilimo)?**

- What did you think of this/Feeling about it. Why?
- **Ulifikirijaje kuhusu hili/unajisikiaje unapopokea meseji za aina hiyo**
- *(If they have received such messages, use prompts from 9)*
- **Kama wamepokea hizo meseji, tumia prompti namba 9)**

**11. Do you like receiving SMS? Why?**

**Je, unapenda kupokea ujumbe mfupi wa maneno (meseji)? Ni kwanini**

- Readability, literacy, screen size, does somebody reads it for you?
- **Usomekaji, uelewa, ukubwa wa kioo cha simu, Je kuna mtu anakusomea**
- Do you like sending sms? Why?
- **Je unapenda kutuma meseji? Kwanini**
- How many promotion SMS do you get? What do you do with them (read/delete)? Why?
- **Je, mnapata kiasi gani cha meseji za promosheni? Mnazifanyia nini? (Kusoma/kufuta)? Kwanini?**
- Does your Inbox sometimes get so full that you cannot receive new messages?
- **Je, kuna muda simu yako inajaa meseji kiasi cha kushindwa kupokea meseji mpya?**

**12. What is your opinion of the mobile network you use? (Trust in company)**

**Je, nini mtazamo wako juu ya mtandao wa simu unaotumia? (Imani juu ya kampuni)**

- Reason: costs, promotion, coverage,
- **Sababu: Gharama, promosheni, upatikanaji**
- Prompt: if conversation isn't flowing discuss in comparison to other networks
- **Dadisi: Kama majadiliano hayaendi katika mtiririko jadili kwa kulinganisha na mitandao mingine)**
- What do you like/don't like about them?
- **Je, unapenda/hupendi nini juu ya mtandao huu?**

- How much of a problem is SMS spam (e.g. promotion)?
- **Ni kwa kiasi gani kumekua na shida katika upokeaji wa meseji taka?**
- Does your inbox sometimes get so full that you cannot receive new messages?
- **Je, wakati mwingie Inbox yako inajaa mpaka kushindwa kupokea meseji mpya?**

**13. Do you experience any problems using your mobile phone? (Details)**

**Je, unapata tatizo lolote katika utumiaji wa simu yako ya mkononi? (Maelezo)**

- Access to electricity, money to top up, where to top up, network coverage. What do you do? Who do you ask for help?
- **Upatikanaji wa umeme, pesa ya vocha, sehemu ya kupata vocha, upatikanaji wa mtandao. Huwa unafanya nini? Unamuomba nani msaada?**
- Technical problems with phone (battery life) - What do you do? Who do you ask for help?
- **Matatizo ya simu ya kiufundi (batri kuharibika/kuchoka)- Huwa unafanya nini? Unamuomba nani msaada?**
- Problems with phone functions (technology literacy) - What do you do? Who do you ask for help?
- **Matatizo juu ya utumiaji wa simu (ufahamu wa kitechnologia)- Huwa unafanya nini? Unamuomba nani msaada?**
- Limited access to phone (when phone is shared) - What do you do? Who do you ask for help?
- **Ugumu katika upatikanaji wa simu (kama simu inatumiwa na mtu zaidi ya mmoja)- Huwa unafanya nini? Unamuomba nani msaada?**

**Thank you. Do you have any questions?**

**Asante. Je mna swali lolote.**

## Topic guide for in-depth interview with local health expert (e.g. midwife, community health worker)

### **Purpose:**

- Understand the main threats to child health and well-being in this area
- Understand current child feeding and nutrition practices in this area
- Understand current information seeking behaviour related to child feeding and nutrition

**Sample:** Local midwife, traditional midwife, health worker or other person in the area who gives women advice on child nutrition and maternal health. Selected through elite sampling.

### 1. Warm-up questions

*How long have you been a health worker? Have you always worked in this area?*

*If the trusted person isn't a health professional adapt the instrument and start by asking why they are asked for health advice, their role in the community, etc. and adapt questions.*

### 2. Information about health and nutrition

#### 1. What are the most common health problems for people in this village?

##### **Ni matatizo gani ya kiafya yanayowapata watu wa kijiji hiki?**

- Young children (below 5 years)
- **Watoto wadogo (chini ya miaka mitano)**
- Women
- **Wanawake**
- Is undernutrition of children a problem in this village? What types of undernutrition are most common? (too thin, too short, vitamin deficient, kwashiorkor, marasmus)
- **Je utapiamlo kwa watoto ni tatizo katika kijiji hiki? Aina gani ya utapiamlo ni tatizo zaidi? (mwembamba zaidi, mfupi zaidi, ukosefu wa vitamin, kwashakoo, marasmus)**
- Environment specific health challenges (water source, agriculture)
- **Changamoto za kiafaya kutokana na mazingira.(vyanzo vya maji, kilimo)**

#### 2. What are the most important causes for health problems in children in this village?

##### **Ni sababu zipi kuu zinazosababisha matatizo ya kiafya kwa watoto katika kijiji hiki?**

- Access to safe water and sanitation
- **Upatikanaji wa maji safi na salama.**
- Access to food

- Upatikanaji wa chakula
- Living environment of children (dirt)
- Mazingira ya watoto wanayoishi (Uchafu)

### 3. Where do people usually go when they have a health problem?

#### **Kwa kawaida watu huenda wapi wanapokua na matatizo ya kiafya?**

- Who do people go to? (e.g. traditional healer, pharmacy, dispensaries, knowledgeable person, hospital) Why?
- Huenda kwa nani? (mfano mganga wa kienyeji, duka la madawa, zahanati, mtu mwenye uelewa/ujuzi, hospitali) Kwanini?
- Barriers to access to health facilities (probe for different levels from dispensaries to hospitals) (e.g. cost, distance, waiting times, staff actually at facilities, refusal of referral, medication available at facilities, transport, accompanying family members)
- Vikwazo katika kufikia vituo vya afya. (Dadisi utofauti uliopo kati ya zahanati na hospitali) (mfano gharama, umbali, muda wa kusubiri, uwepo wa wahudumu, kutopewa rufaa, upatikanaji wa dawa, usafiri, kusindikizwa na wanafamilia)

### 4. Have there been any new major health or nutrition programmes for young children in the last 2-3 years in this area (government, donor, NGO)? Ask for details

#### **Je kumekuwa na programu kubwa zinazohusu afya na lishe kwa watoto wadogo ndani ya miaka 2 hadi 3 iliyopita katika eneo hili? (Serikali, wafadhili, asasi zisizo za kiserikali)?**

- Who is running the programme?
- Nani anayeendesha hiyo programu?
- Aims of programme?
- Lengo la programu?
- Who gets support (type of people and areas)?
- Nani anayenufaika (aina ya watu na maeneo)
- Focus i.e. breastfeeding, nutrition, etc.?
- Lengo mahususi. Mfano unyonyeshaji, lishe?
- What are they doing?
- Wanafanya nini?
- Has there been any change as a result of these programmes? If so, which ones and why?
- Kumekuwepo na mabadiliko yoyote kutokana na programu hii? Kama ndiyo, ni yapi na kwanini?

### 5. Do women in this area go to antenatal check-ups when they are pregnant? How often? Why not?

#### **Je, wanawake wa eneo hili huwa wanahudhuria kliniki wanapokuwa wajawazito? Mara ngapi? Kwanini hawahudhuri?**

- Where do people go for check-ups?

- Ni wapi watu huenda kufanya vipimo?
- Ask about barriers to antenatal check-ups (men not willing to accompany, staff available, equipment available, etc. - see prompts from question 3)
- Uliza kuhusu vikwazo vinavyozuia kupata vipimo (wanaume kutokuwa tayari kuwasindikiza, upatikanaji wa wahudumu wa afya, upatikanaji wa vitendea kazi. **Mfano tumia dadisi za swali namba 3**)
- Do women come later than 12 weeks? Why? What happens? What do you think are the reasons for this?
- Je, kuna wanawake uhudhuria baada ya wiki 12? Kwanini? Hutokea nini? Unafikiri ni sababu zipi zinazopelekea hali hiyo?

## 6. Where do women in this area usually give birth?

### **Kwa kawaida, ni wapi wanawake wa kijiji hiki wanajifungulia?**

- How do women make the decision on where to give birth?
- Ni kwa namna gani wanawake wanafanya maamuzi mahali pa kujifungulia?
- Who influences the decision on where to give birth?
- Ni nani anashawishi/ushawishi katika maamuzi ya mahali pa kujifungulia?
- What happens if women gives birth at home and only seeks the help of the dispensary after giving birth?
- Patatokea nini endapo mama atajifungua nyumbani na baada ya hapo kutafuta huduma zahanati?

## 7. Do you give pregnant women advice on how to stay healthy during pregnancy?

### **Je, huwa unatoa ushauri kwa mama wajawazito jinsi ya kuwa na afya bora wakati wa ujauzito?**

- What? Ask about nutrition advice
- Upi? Uliza ushauri kuhusu lishe
- Do women follow the nutrition advice you give? Why? Why not? How do women react? (quick uptake, excuses such as money, a lot of time required for persuasion)
- Je, kinamama hufuata ushauri unaowapatia kuhusu lishe? Kwanini? Kwanini hapana? Kinamama huchukuliaje? (urahisi wa kuupokea, visingizio kama fedha, huhitaji muda mwingi kuwashawishi)
- Do you follow up in order to see whether your advice is being followed?
- Je unafatilia kuona kama ushauri wako unazingatiwa?
- Who else gives advice?
- Nani mwingine anatoa ushauri?

## 8. Do you give mothers advice on how to feed their baby?

### **Je, unawapa wakina mama ushauri jinsi ya kuwalisha watoto wao?**

- What?
- Upi?
- Do women follow the advice? Why? Why not?

- Je wanafuata ushauri huo? Kwanini? Kwanini Hapana?
- Do you follow up to check whether your advice is being followed?
- Je unafatilia kuona kama ushauri wako unazingatiwa?
- Who else gives advice?
- Nani mwingine anatoa ushauri?

**9. Do you give mothers advice when they have problems with breastfeeding?**

**Je, unawapa wakina mama ushauri wanapokua na matatizo ya unyonyeshaji?**

- What?
- Upi?
- Do women follow the advice? Why? Why not?
- Je wanafuata ushauri huo? Kwanini? Kwanini Hapana?
- Do you follow up to check whether your advice is being followed?
- Je unafatilia kuona kama ushauri wako unazingatiwa?
- Who else gives advice?
- Nani mwingine anatoa ushauri?

**10. Where else do pregnant women and young mothers get information about child feeding?**

**Sehemu gani nyingine wakina mama wajawazito na wenye watoto hupata taarifa kuhusu ulishaji wa watoto?**

- What advice?
- Aina gani ya ushauri?
- Who gives advice?
- Nani anayetoa ushauri?
- Where does advice come from? (source and medium)
- Ushauri unatoka wapi? (vyanzo na vyombo vya habari)
- Why do they go there?
- Kwanini wanaenda huko?

**11. How easy or how difficult is it for mothers in this area to access information about nutrition?**

**Je, kuna urahisi au ugumu wowote kwa wamama wa eneo hili kupata taarifa kuhusu lishe?**

- Barriers to access
- Ugumu wa upatikanaji.
- Best way to get information (channels)
- Njia nzuri zaidi ya kupata taarifa.
- Time of day/week do they want information (e.g. Saturdays)
- Muda wa siku au wiki ambao wangependa kupata taarifa (mfano jumamosi)

**12. Have you heard about automated messages with information about pregnancy and child feeding for women? (If they have not, ask hypothetically)**

Umeshawahi kusikia kuhusu meseji za moja kwa moja zenye taarifa za wajawazito na ulishaji wa watoto kwa wanawake?

- What/would do you think about it?
- **Unaonaje/utaonaje kuhusu hili?**
- Do/would people find this useful? Why/why not?
- **Je, watu wanaona/wataona umuhimu wake? Kwanini? Kwanini hapana?**

**13. In your opinion, is there any information on nutrition missing in your area?**

**Kwa mtazamo wako, kuna taarifa zozote za lishe zinazokosekana katika eneo hili?**

- Ask for details (e.g. detailed information about breastfeeding, food preparation)
- **Uliza kwa taarifa zaidi (mfano unyonyeshaji, utayarishaji wa chakula)**

**Thank you. Do you have any questions?**

## Topic guide for in-depth interview with local mobile phone kiosk operator

### **Purpose:**

- *Understand acceptability and use of mobile phones in the village*
- *Explore usage and problems of phones*

### 1. Warm-up questions

*Can you tell me a little about your work please? What do you do related to mobile phones (sell voucher, charge phones, etc.)?*

### 2. Use of mobile phones

#### 1. Do many people in this village own a mobile phone?

##### **Je, umiliki wa simu katika kijiji hiki ukoje?**

- More men than women? Why?  
*Wanaume wengi wanamiliki simu kuliko wanawake? Kwanini?*
- Young/old  
*Vijana/Mabinti/wazee*
- Share mobile phone common? How does it work in practice?  
*Ni kawaida kutumia simu kwa pamoja? Huwa kwa kawaida inakuwaje pale ambapo simu inatumiwa na watu zaidi ya mmoja?*
- Several SIM cards common? How does it work in practice?  
*Watu wanamiliki line zaidi ya moja? Hii inakuwaje?*

#### 2. What do people in this village use their mobile phones for?

##### **Je watu wa kijiji hiki wanatumia simu kufanya mambo gani?**

- SMS, Voice calls  
*Kutuma au kupokea ujumbe mfupi, kupiga au kupokea simu*
- What do they like best about their phones? Why?  
*Wanapendelea mambo gani zaidi kwenye simu zao? Ni kwanini?*

#### 3. What are common problems people experience with their mobile phone? (Details)

##### **Je, ni matatizo gani watu wanakubana nayo mara wa mara katika utumiaji wa simu zao?**

- Access to electricity, money to top up, where to top up, network coverage
- *Upatikanaji wa umeme, pesa ya vocha, sehemu ya kupata vocha, upatikanaji wa mtandao*
- Technical problems with phone (battery life)
- *Matatizo ya simu ya kiufundi (batri kuharibika/kuchoka)*

- Problems with phone functions of phone (technology literacy)
  - **Matatizo juu ya utumiaji wa simu (ufahamu wa kitechnologia)**
  - Limited access to phone (when phone is shared)
  - **Ugumu katika upatikanaji wa simu (kama simu inatumiwa na mtu zaidi ya mmoja)**
  - Who do they ask for help?
  - Ni nani wanamuomba msaada?
4. **How popular is SMS as a means of communicating with people (e.g. about agriculture, health)?**  
**Je, ni kwa kiasi gani utumaji/upokeaji wa meseji ni njia ya mawasiliano kwa watu wa kijiji hiki? (Mfano. Kuhusu kilimo,afya)**
- Are people able to read SMS (literacy)?  
**Je, watu wanaweza kusoma meseji (uelewa)?**
  - Do people complain about too many promotion SMS?  
**Je watu wanalamika juu ya upokeaji wa meseji nyingi za matangazo?**
5. **What do people feel about mobile operators?**  
**Je, watu wanajisikiaje/wanazungumziaje kuhusu watoa huduma wa mitandao ya simu?**
- How do they choose?  
**Wanachagua je mitandao ya simu?**

**Thank you. Do you have any questions?**

**Asante sana. Je, una swali lolote?**

## Topic guide for in-depth interview with village chairman

### **Purpose:**

- Understand local issues relating to maternal and child nutrition
- Explore acceptability, familiarity and use of mobile phones within community including village access to services and support
- Gain the trust of the community and permission to conduct research with households

### **1. Warm-up questions**

How big is the village? How long have you been chairman?

### **2. Health and nutrition situation in village**

#### **1. What programmes related to nutrition have previously or are currently running in your village? (Details)**

**Ni aina gani ya programu zinazohusiana na lishe ambazo zipo au zilikuwepo katika kijiji hiki?**

#### **2. How is the health of people in the village?**

**Kwa ujumla afya ya watu wa kijiji hiki ikoje?**

- Common health problems. Why?
- **Matatizo ya kiafya ya mara kwa mara. Kwanini?**
- Health problems of children. Why?
- **Matatizo ya kiafya kwa watoto. Kwanini?**
- Is undernutrition a problem? Why?
- **Utapiamlo/lishe duni ni tatizo? Kwanini?**

#### **3. How do people in this village get information about health and nutrition?**

**Ni kwa namna gani watu wa kijiji hiki hupata taarifa kuhusu afya na lishe?**

- Who?
- **Nani?**
- What information?
- **Aina gani ya taarifa?**
- What/whose information do they trust most? Why? Do many households have access to information
- **Taarifa ipi au ya nani huaminiwa zaidi? Kwanini? Je kaya nyingi huweza kupata taarifa?**
- Is any information on health and nutrition missing? Ask for details, focus on child health and nutrition
- **Kuna taarifa zozote zinazohusiana na lishe au afya zinakosekana? Uliza kwa taarifa zaidi, lenga kwenye afya na lishe ya mtoto.**

#### **4. Where do people usually go when they have a health problem?**

**Kwa kawaida watu huenda wapi wanapokuwa na matatizo ya kiafya?**

- Who do people go to? (e.g. traditional healer, pharmacy, dispensaries, knowledgeable person, hospital) Why?

- Huenda kwa nani? (mfano mganga wa kienyeji, duka la madawa, zahanati, mtu mwenye uelewa/ujuzi, hospitali) Kwanini?
- Barriers to access to health facilities (probe for different levels from dispensaries to hospitals) (e.g. cost, distance, waiting times, staff actually at facilities, refusal of referral, medication available at facilities, transport, accompanying family members)
- Vikwazo katika kufikia vituo vya afya. (dadisi utofauti uliopo kati ya zahanati na hospitali) (mfano gharama, umbali, muda wa kusubiri, uwepo wa wahudumu, kutopewa rufaa, upatikanaji wa dawa, usafiri, kusindikizwa na wanafamilia)

### 3. Use and acceptability of mobile phones

#### 5. Do many people in this village own a mobile phone?

##### Je, umiliki wa simu katika kijiji hiki ukoje?

- More men than women. Why?
- Wanaume wengi kuliko wanawake. Kwanini?
- Young/old
- Vijana au wazee
- Share mobile phone common? How does it work in practice?
- Ni kawaida kutumia simu zaidi ya mtu mmoja? Inafanyika vipi?
- Several SIM cards common? How does it work in practice?
- Ni kawaida kuwa na laini za simu zaidi ya moja? Inafanyika vipi?

#### 6. What do people in this village use their mobile phones for?

##### Je, katika kijiji chenu watu hutumia simu za mkononi kwa matumizi gani/yapi?

- SMS, Voice calls
- Messeji, kupiga
- What do they like best about their phones? Why?
- Wanapendelea nini hasa katika simu zao za mkononi? Kwanini?

#### 7. What are common problems people experience with their mobile phone? (details)

##### Ni matatizo gani watu hupata mara kwa mara katika utumiaji wa simu zao za mkononi?

- Access to electricity, money to top up, where to top up, network coverage
- Upatikanaji wa umeme, hela ya vocha, mahali pa kupatia vocha, upatikanaji wa mtandao,
- Technical problems with phone (battery life)
- Matatizo ya kiufundi kwenye simu (betri kufa)
- Problems with phone functions of phone (technology literacy)
- Matatizo katika utumiaji wa simu (kutoelewa jinsi ya kuitumia)
- Limited access to phone (when phone is shared)

- Upatikanaji mdogo wa kutumia simu (mfano kama simu inatumiwa zaidi ya mtu mmoja)
- Who do they ask for help?
- Huomba msaada kwa nani?

**8. How popular is SMS as a means of communicating between people?**

**Kwa kiasi gani meseji zinatumiwa kama njia kuu katika mawasiliano baina ya watu?**

- Are people able to read SMS (literacy)?
- Watu wana uwezo wa kusoma meseji (ufahamu)
- Do people complain about too many promotion SMS?
- Je, watu hulalamika kuhusu wingi wa meseji za matangazo?

**9. In your opinion, do you think people would find automated messages with information on health useful? Why?**

**Kwa mtazamo wako, unadhani watu wataona umuhimu wa meseji za moja kwa moja ambazo zina ujumbe juu ya afya? Kwanini?**

- Do you know of any programmes that used automated SMS to share health information in this area?
- Je, unajua programu yoyote inayotumia meseji za moja kwa moja kusambaza ujumbe wa afya katika eneo hili?

**Thank you. Do you have any questions?**

**Ahsante. Mna maswali yoyote?**

## Topic guide for focus group discussion with young mothers with children

### **Purpose:**

- Explore acceptability and use of mobile phones among mothers with young children
- Understand current information seeking behaviours and practices related to child feeding

### 1. Warm-up questions

How long have you lived in this village?

### 2. Nutrition information seeking

#### 1. What do you and your family usually eat on a typical day?(current practice)

**Kwa kawaida ninyi na familia zenu huwa mnakula nini?**

#### 2. In your opinion, what makes a good diet? Why? (knowledge)

**Kwa mtazamo wenu, chakula bora ni kipi?**

- Prompt: What types of foods
- **Dadisi: Ni aina gani za vyakula**
- Number of meals a person has per day
- **Idadi ya milo kwa siku**
- Size of portion per meal
- **Kiasi cha chakula kwa kila mlo**
- Differences between good diet for men/women, pregnant and adults/children (if same food, is it cut in smaller pieces for children, or mashed, or less spicy)
- **Utofauti wa chakula bora kati ya wanaume/wanawake na watu wazima/watoto (kama chakula ni kile, je hukakwa vipande kwa ajili ya watoto au kupondwapondwa au kupunguzwa viungo)**
- What do you value in a diet (quantity of food? Quality of food? Type of food?) Why?
- **Huwa mnathamini nini kwenye lishe? (kiasi cha chakula, ubora wa chakula, aina ya chakula) Kwanini?**

#### 3. What do you think is important for babies to eat to stay healthy and grow well? Why? (knowledge, beliefs)

**Ni kitu gani mnafikiri ni muhimu kwa watoto kula ili kuwa na afya na ukuaji mzuri? Ni kwanini (uelewa, Imani)**

- What is the first food a baby should get after delivery and why? And when? (breastfeeding, colostrum, other food or drinks as first food, and when and why? (e.g. due to problems breastfeeding or beliefs)

- Ni chakula gani cha mwanzo mtoto anatakiwa kupewa baada ya kuzaliwa na kwanini? Na wakati gani? (Kunyonyesha, dang'a-maziwa ya mwanzo ya njano, aina nyingine ya chakula au vinywaji kama chakula cha mwanzo, wakati gani na kwanini? (mfano; kutokana na matatizo ya unyonyeshaji au Imani)
- In the first 6 months after birth? (breastfeeding; whether they believe a baby needs other food/drink)  
Miezi sita ya mwanzo baada ya kujifungua, (kunyonyesha; kama anaamini mtoto anahitaji vyakula/vinywaji vingine)
- In the first year of life? (ask about the age at which the baby needs to get food and drinks other than breast milk; type of food)
- Ndani ya mwaka mmoja? (uliza kuhusu umri ambao mtoto anatakiwa aanze kupata chakula na vinywaji vingine tofauti na maziwa ya mama; aina ya chakula.
- What foods/drinks do people give to children above 6 months of age in this area? Why? Does feeding differ between boys and girls? (earlier, more food)
- Ni aina gani ya vyakula/vinywaji watu huwapa watoto wao wenye umri zaidi ya miezi sita katika eneo hili? Kwanini? Je, ulishaji unatofautiana kati ya watoto wa kiume na wa kike? (hulishwa mapema, chakula zaidi)
- If they talk about the special mixture porridge (e.g. maize, grains, groundnuts), ask how they prepare it (especially if they have little money and only use 1 grain rather than mixture), how store, how feed?
- Kama watazungumzia kuhusu mchanganyiko maalum wa uji (mfano; mahindi, nafaka, karanga) uliza jinsi wanavyoandaa (hasa kama wana pesa kidogo na wanatumia aina moja ya nafaka kuliko mchanganyiko), wanavyotunza, wanavyolisha

#### 4. How do you know that a child is growing well?

##### **Je, mtajuaje kuwa ukuaji wa mtoto ni mzuri?**

- Weight gain, height, cognitive stage of development, energy levels
- Kuongezeka uzito, urefu, uwezo wa ubongo kufanya kazi, kiasi cha nguvu
- Girl/boy
- Msichana/Mvulana
- What do parents in this village do when they think the child is not growing well?
- Je, wazazi wanafanya nini wanapogundua ukuaji wa mtoto sio mzuri?
- Who do they ask for help?
- Ni nani mnamuomba msaada?

#### 5. Who in this village gives mothers guidance on how to feed baby?

##### **Ni nani katika kijiji hiki huwapa maelekezo akina mama juu ya ulishaji wa mtoto?**

- Who (e.g. health worker, midwife, and traditional birth attendants, other family members)
- Nani (mfano; mhudumu wa afya, mkunga, mkunga wa jadi, mwanafamilia mwingine)

- Whose guidance do mothers trust most? Why?
- Ni maelekezo yapi akina mama wanayaamini Zaidi? Kwanini?

**6. In your opinion, who in the household is most knowledgeable about what foods are good for health?**

**Kwa mtazamo wenu, ni nani katika kaya ana uelewa zaidi juu ni vyakula vipi ni bora kwa afya?**

- Who in the household knows most about foods that are good for children's health?
- Ni nani katika kaya ana uelewa zaidi juu ya vyakula bora kwa afya ya watoto?

**7. In this area, who in the household usually determines what foods the household eats?**

**Katika eneo hili, ni nani anaefanya maamuzi ni chakula gani kiliwe katika kaya?**

- Who purchases (mother, grandmother, father, grandfather etc.), Why?
- Ni nani anayenunua? (mama, bibi, baba, babu n.k) Kwanini?
- Who decides what food is bought? Why?
- Ni nani anaefanya maamuzi ya aina gani ya chakula kinunuliwe? Kwanini?
- Who decides what food is eaten (mother, grandmother, father, grandfather etc.), Why?
- Ni nani anayefanya maamuzi juu ya chakula gani kiliwe? (mama, bibi, baba, babu n.k)
- Who decides how much everybody gets (mother, grandmother, father, grandfather etc.), Why?
- Ni nani anayefanya maamuzi juu ya kiasi gani cha chakula kila mwanakaya apate? (mama, bibi, baba, babu n.k) Kwanini?
- If men decide, what happens if you want to buy something different from what men or others in your household want you to buy?
- Kama wanaume huamua, kinatokea nini kama mnataka kununua kitu cha tofauti na kile ambacho wanaume au watu wengine kwenye kaya wanataka mnunue?

**8. Where do people in this area usually go to get information on how to eat well to stay healthy?**

**Kwa kawaida watu wa eneo hili wanapata wapi taarifa kuhusu ulaji bora ili kuwa na afya nzuri?**

- Who? (e.g. health worker, family, NGOs, radio/TV)? Why?
- Nani? (mfano; mhudumu wa afya, mwanafamilia, asasi zisizo za kiserikali, redio/televisheni)? Kwanini?
- What type of information is available?
- Ni aina gani ya taarifa hupatikana?
- Do you seek advice from different sources and compare them? Why?
- Je, mnatafuta ushauri kutoka vyanzo mbalimbali vya taarifa na kuzilinganisha? Kwanini?

**9. Is it easy or difficult for people in this area to access information about nutrition?**

**Je, kuna urahisi au ugumu wowote kwenye upatikanaji wa taarifa zinazohusiana na lishe katika eneo hili? Kwanini?**

- Barriers to access
- Vikwazo katika upatikanaji
- Best way to get information (channels)
- Njia nzuri ya kupata taarifa(channels)
- Time of day/week do they want information (e.g. Saturdays)
- Muda wa siku/wiki wanaitaji taarifa (mfano;Jumamosi)

**10. Is there anything more you need to know about food and nutrition in order to know what is good for you and your family (Missing information)? Ask for details**

**Je, kuna lolote zaidi ambalo mngenda kufahamu juu ya chakula na lishe ili kujua kipi ni kizuri kwenu na kwa familia. (Taarifa inayokosekana)? Ulizia kwa undani**

- Breastfeeding
- Unyonyeshaji
- Preparing food
- Uandaaji wa chakula
- Food for different age groups? Do you know for all ages?
- Chakula kwa rika tofauti? Je, mnafahamu kwa rika zote?

**3. Acceptability, familiarity and use of mobile phone**

We discussed a lot about diets and how you get information. We now want to speak about mobile phones and how they might help you to get access to information about nutrition.

**11. Do many women in this village own or have access to a mobile phone?**

**Je, wanawake katika kijiji hiki wanamiliki/kuwa na uwezo wa kutumia simu ya mkononi?**

- More men than women own phone. Why?
- Wanaume wengi zaidi ya wanawake humiliki simu. Kwanini?
- Older/younger women. Why?
- Watu wazima/mabinti. Kwanini?
- Share mobile phones, how does it work in practice?
- Kutumia simu kwa pamoja, huwa inafanyikaje?
- Is it common to have more than 1 SIM card? Why is this? How does this work in practice?
- Ni kawaida kuwa na laini zaidi ya moja? Kwanini? Huwa inakuaje?

**12. Do people in this community experience any problems using their mobile phones? (details)**

**Je, watu wa eneo hili wanapata matatizo yoyote katika utumiaji wa simu za mkononi?**

- Access to electricity, money to top up, where to top up, network coverage what do they do? Who do they ask for help?
- **Upatikanaji wa umeme, pesa ya vocha, sehemu ya kupata vocha, upatikanaji wa mtandao-Huwa wanafanyaje? Huwa wanamuomba nani msaada?**
- Technical problems with phone (battery life) what do they do? Who do they ask for help?
- **Matatizo ya simu ya kiufundi (batri kuharibika/kuchoka) - Huwa wanafanyaje? Huwa wanamuomba nani msaada?**
- Problems with phone functions (technology literacy) what do they do? Who do they ask for help?
- **Matatizo juu ya utumiaji wa simu (ufahamu wa kitechnologia)- Huwa wanafanyaje? Huwa wanamuomba nani msaada?**
- Limited access to phone (when phone is shared)
- **Ugumu katika upatikanaji wa simu (kama simu inatumiwa na mtu zaidi ya mmoja)**

**13. Do you like receiving SMS? Why?**

**Je, mnapenda kupokea ujumbe mfupi wa maneno (meseji)? kwanini**

- Readability, literacy, screen size, does somebody reads it for you?
- **Usomekaji, uelewa, ukubwa wa kioo cha simu, Je kuna mtu anakusomea**
- Do you like sending sms? Why?
- **Je mnapenda kutuma meseji? Kwanini**
- How many promotion SMS do you get? What do you do with them (read/delete)? Why?
- **Je, mnapata kiasi gani cha meseji za promosheni? Mnazifanyia nini? (kusoma/kufuta)? Kwanini?**
- Does your Inbox sometimes get so full that you cannot receive new messages?
- **Je, kuna muda simu zenu zinajaa meseji kiasi cha kushindwa kupokea meseji mpya?**

**14. Have you ever used the mobile phone to get information on health or nutrition? Please explain? (seek and receive information)**

**Je mmewahi kupata taarifa za afya au lishe kupitia simu ya mkononi? Tafadhali elezea?**

- What information?(e.g; breast feeding, illness, medication)
- **Ni taarifa gani? (Mfano; Unyonyeshaji, ugonjwa, matibabu)**
- How? (e.g. automate messages)
- **Kivipi? (Mfano;Meseji za moja kwa moja (automatic sms)**
- Contact the health worker, arrange an appointment, call relative/friends in health emergencies/labour, etc.?  
**Kuwasiliana na muhudum wa afya, kupanga miadi (appointment), kumpigia ndugu/rafiki wakati wa dharura inayohusu afya/uchungu, n.k.**

**15. In your opinion, can mobile phones help mothers and pregnant women to get access to information about nutrition? How?**

**Kwa mtazamo wenu, simu za mkononi zinaweza kuwasaidia akina mama wenye watoto na wajawazito kupata taarifa za lishe? Kivipi?**

- What kind of information? Why?
- Aina gani ya taarifa? Kwanini?

**16. Have you ever received automated messages with health information for yourself or your family? (If they have not, ask hypothetically how they would feel about it) (perceptions/trust of automated messages on health)**

**Je mmewahi kupokea meseji za moja kwa moja (automated) zenye taarifa za afya kwa ajili yako au familia? (kama hawajapokea, uliza wangejisikiaje kuzipokea) (mitazamo/kuamini meseji za moja kwa moja (automated) kuhusu afya)**

- From whom? (government, NGO, Company)
- Kutoka kwa nani? (Serikali, Asasi zisizo za kiserikali, kampuni)
- How did you/would you feel about automated messages?
- Mlifanyaje/Mngejisikiaje kuhusu meseji za moja kwa moja?
- Perceived as useful, why? Why not?
- Mnazichukulia kama zina umuhimu? Kwanini? Kwanini hapana?
- Trust in information, Why/Why not? What makes information trustworthy?
- Kuamini taarifa, kwa nini/kwanini hapana? Je, ni nini kinafanya taarifa hiyo iwe yakuaminika?
- Influence whether you perceive the messages as useful (e.g. who sends it/where information comes from, personalised to individual situation, frequency, best time to receive the message during the day)
- Vitu gani vinawashawishi kuona meseji hizi ni za muhimu (mfano: mtumaji/taarifa zinapotoka, inayokuhusu moja kwa moja, kwa kujirudia rudia, muda muafaka wa kupokea meseji.
- Are there other channels for information you would prefer? (Radio, TV?)
- Je kuna vyanzo vingine vya taarifa ambavyo mngependelea? (radio, televisheni)

**17. Do you think your husband would find automated messages with information on nutrition (for children and you) useful? Why/Why not?**

**Je, mnadhani waume zenu wataona umuhimu wa meseji za moja kwa moja kuhusu suala zima la lishe(kwa watoto na kwenu)? Kwanini? Kwanini hapana?**

- How would you feel about it?
- Mtalichukuliaje suala hilo?

**Thank you. Do you have any questions?**

**Asante. Je mna swali lolote**

## Topic guide for focus group discussion with pregnant women who own a mobile phone

### **Purpose:**

- Explore acceptability and use of mobile phones among pregnant women
- Understand current information seeking behaviours and practices related to nutrition in pregnancy and child feeding

### **1. Warm-up questions**

How long have you lived in this village?

### **2. Nutrition information seeking**

1. **What do you and your family usually eat on a typical day?(current practice)**  
**Kwa kawaida ninyi na familia zenu huwa mnakula nini?**
2. **In your opinion, what makes a good diet? Why? (knowledge, get details)**  
**Kwa mtazamo wenu, chakula bora ni kipi?**
  - Prompt: What types of foods
  - **Dadisi: Ni aina gani za vyakula**
  - Number of meals a person has per day
  - **Idadi ya milo kwa siku**
  - Size of portion per meal
  - **Kiasi cha chakula kwa kila mlo**
  - Differences between good diet for men/women, pregnant and adults/children (if same food, is it cut in smaller pieces for children, or mashed, or less spicy)
  - **Utofauti wa chakula bora kwa wanaume/wanawake, wajawazito na watu wazima/watoto (kama ni chakula hicho, je hukatwa vipande vidogo kwa ajili ya watoto au kupondwapondwa au kupunguzwa viungo)**
  - What do you value in a diet (quantity of food? Quality of food? Type of food?) Why?
  - **Ni vitu gani mnathamini katika lishe? (wingi wa chakula? Ubora wa chakula? Aina ya chakula? Kwanini?**
3. **Has anybody ever given you advice on how to eat well during pregnancy? Or did you get advice from somewhere else (radio, TV)? (information sources)**  
**Je, kuna yeyote ambaye amewahi kuwapa ushauri juu ya ulaji mzuri wakati wa ujauzito? Au mlipata taarifa kutoka sehemu nyingine(redio,Tv) (vyanzo vya taarifa)**
  - Who (e.g. health worker, family, village elder)?
  - **Ni nani (mfano mhudumu wa afya, mwanafamilia, mwanakijiji mwingine**
  - What (foods to eat/not eat during pregnancy)?

- Nini (vitu vya kula/kutokula wakati wa ujauzito)
- Did you follow the advice? Why?/Why not
- Je, mlifuata ushauri mliopewa? Ni kwanini?/Kwanini hapana
- Whose advice on eating well during pregnancy do you trust and value? Why? (e.g. government, NGO, family members)
- Je, ni ushauri wa nani mnaouamini na kuuthamini kuhusu ulaji bora wakati wa ujauzito? Ni kwanini? (mfano. Serikali, Asasi zisizo kuwa za kiserikali, wanafamilia.
- Have you received any advice that you don't trust or value? Why don't you trust this advice?
- Je, mmewahi kupata ushauri ambao hamuamini au kuuthamini? Kwanini hukuamini ushauri huo?
- Was it useful? Why?/Why not?
- Je, ulikuwa na manufaa? Kwanini? Kwanini hapana?
- How could it be made more useful? What would you like to know?  
Ni kwa jinsi gani unaweza kuwa wa manufaa zaidi? Ugependa kujua nini?

4. **Who in this village gives pregnant women guidance on how to eat to stay well?**

**Ni nani katika kijiji hiki huwapa wanawake wajawazito maelekezo kuhusu ulaji ili kuwa na afya bora?**

- Who (e.g. health worker, midwife, and traditional birth attendants, other family members)
- Nani (mfano; mhudumu wa afya, mkunga, mkunga wa jadi, mwanafamilia mwingine)
- Whose guidance do mothers trust most? Why?
- Ni maelekezo yapi akina mama wanayaamini Zaidi? Kwanini?

5. **What do you think is important for babies to eat to stay healthy and grow well? Why? (Knowledge, beliefs)**

**Ni kitu gani mnafikiri ni muhimu kwa watoto kula ili kuwa na afya na ukuaji mzuri? Ni kwanini (uelewa, Imani)**

- What is the first food a baby should get after delivery and why? And when? (Breastfeeding, colostrum, other food or drinks as first food, and when and why? (e.g. due to problems breastfeeding or beliefs))
- Ni chakula gani cha mwanzo mtoto anatakiwa kupewa baada ya kuzaliwa na kwanini? Na wakati gani? (Kunyonyesha, dang'a-maziwa ya mwanzo ya njano, aina nyingine ya chakula au vinywaji kama chakula cha mwanzo, wakati gani na kwanini? (mfano; kutokana na matatizo ya unyonyeshaji au Imani)
- In the first 6 months after birth? (breastfeeding; whether they believe a baby needs other food/drink)  
Miezi sita ya mwanzo baada ya kujifungua, (kunyonyesha; kama wanaamini mtoto anahitaji vyakula/vinywaji vingine)
- In the first year of life? (ask about the age at which the baby needs to get food and drinks other than breast milk; type of food)

- Ndani ya mwaka mmoja? (uliza kuhusu umri ambao mtoto anatakiwa aanze kupata chakula na vinywaji vingine tofauti na maziwa ya mama; aina ya chakula.

**6. Who in this village gives mothers guidance on how to feed baby?**

**Ni nani katika kijiji hiki huwapa maelekezo akina mama juu ya ulishaji wa mtoto?**

- Who (e.g. health worker, midwife, and traditional birth attendants, other family members)
- Nani (mfano; mhudumu wa afya, mkunga, mkunga wa jadi, mwanafamilia mwingine)
- Whose guidance do mothers trust most? Why?
- Ni maelekezo yapi akina mama wanayaamini Zaidi? Kwanini?

**7. In your opinion, who in the household is most knowledgeable about what foods are for health?**

**Kwa mtazamo wenu, ni nani katika kaya ana uelewa zaidi juu ya vyakula bora kwa afya?**

- Who in the household knows most about foods that are good for children's health?
- Ni nani katika kaya ana uelewa zaidi juu ya vyakula bora kwa akina mama wajawazito?

**8. In this area, who in the household usually determines what foods the household eats?**

**Katika eneo hili, ni nani huwa anafanya maamuzi ni chakula gani kiliwe katika kaya?**

- Who purchases (mother, grandmother, father, grandfather etc.), Why?
- Ni nani anayenunua? (mama, bibi, baba, babu n.k) Kwanini?
- Who decides what food is bought? Why?
- Ni nani anaefanya maamuzi juu ya chakula gani kinunuliwe? Kwanini?
- Who decides what food is eaten (mother, grandmother, father, grandfather etc.), Why?
- Ni nani anayefanya maamuzi juu ya chakula gani kiliwe? (mama, bibi, baba, babu n.k)
- Who decides how much everybody gets (mother, grandmother, father, grandfather etc.), Why?
- Ni nani anayefanya maamuzi juu ya kiasi gani cha chakula kila mwanakaya apate?(mama, bibi, baba, babu n.k) Kwanini?
- If men decide, what happens if you want to buy something different from what men or others in your household want you to buy?
- Kama wanaume huamua, nini kinatokea endapo mnataka kununua kitu cha tofauti na ambacho wanaume au wanakaya wengine wanapenda mnunue?

**9. Where do people in this area usually go to get information on how to eat well to stay healthy?**

**Kwa kawaida watu wa eneo hili wanapata wapi taarifa kuhusu ulaji bora ili kuwa na afya nzuri?**

- Who? (e.g. health worker, family, NGOs, radio/TV)? Why?
- **Nani? (mfano; mhudumu wa afya, mwanafamilia, asasi zisizo za kiserikali, redio/televisheni)? Kwanini?**
- What type of information is available?
- **Ni aina gani ya taarifa hupatikana?**
- Do you seek advice from different sources and compare them? Why?
- **Je, mnatafuta ushauri kutoka vyanzo mbalimbali vya taarifa na kuzilinganisha? Kwanini?**

**10. Is it easy or difficult for people in this area to access information about nutrition?**

**Je, kuna urahisi au ugumu wowote kwenye upatikanaji wa taarifa zinazohusiana na lishe katika eneo hili? Kwanini?**

- Barriers to access
- **Vikwazo katika upatikanaji**
- Best way to get information (channels)
- **Njia nzuri ya kupata taarifa(channels)**
- Time of day/week do they want information (e.g. Saturdays)
- **Muda wa siku/wiki wanaitaji taarifa (mfano;Jumamosi)**

**11. Is there anything more you need to know about food and nutrition in order to know what is good for you and your family (Missing information)? Ask for details**

**Je, kuna lolote zaidi ambalo mngependa kufahamu juu ya chakula na lishe ili kujua kipi ni kizuri kwenu na kwa familia. (Taarifa inayokosekana)? Ulizia kwa undani**

- Breastfeeding
- **Unyonyeshaji**
- Preparing food
- **Uandaaji wa chakula**
- Food for different age groups? Do you know for all ages?
- **Chakula kwa rika tofauti? Je, mnafahamu kwa rika zote?**

**3. Acceptability, familiarity and use of mobile phone**

We discussed a lot about diets and how you get information. We now want to speak about mobile phones and how they might help you to get access to information about nutrition.

**12. Do many women in this village own or have access to a mobile phone?**

**Je, wanawake katika kijiji hiki wanamiliki/kuwa na uwezo wa kutumia simu ya mkononi?**

- More men than women own phone. Why?
- Wanaume wengi zaidi ya wanawake humiliki simu. Kwanini?
- Older/younger women. Why?
- Watu wazima/mabinti. Kwanini?
- Share mobile phones, how does it work in practice?
- Kutumia simu kwa pamoja, huwa inafanyikaje?
- Is it common to have more than 1 SIM card? Why is this? How does this work in practice?
- Ni kawaida kuwa na laini zaidi ya moja? Kwanini? Huwa inakuaje?

**13. Do people in this community experience any problems using their mobile phones? (details)**

**Je, watu wa eneo hili wanapata matatizo yoyote katika utumiaji wa simu za mkononi?**

- Access to electricity, money to top up, where to top up, network coverage what do they do? Who do they ask for help?
- Upatikanaji wa umeme, pesa ya vocha, sehemu ya kupata vocha, upatikanaji wa mtandao-Huwa wanafanya nini? Huwa wanamuomba nani msaada?
- Technical problems with phone (battery life) what do they do? Who do they ask for help?
- Matatizo ya simu ya kiufundi (batri kuharibika/kuchoka) Huwa wanafanya nini? Huwa wanamuomba nani msaada?
- Problems with phone functions (technology literacy) what do they do? Who do they ask for help?
- Matatizo juu ya utumiaji wa simu (ufahamu wa kitechnologia) Huwa wanafanya nini? Huwa wanamuomba nani msaada?
- Limited access to phone (when phone is shared)
- Ugumu katika upatikanaji wa simu (kama simu inatumiwa na mtu zaidi ya mmoja)

**14. Do you like receiving SMS? Why?**

**Je, mnapenda kupokea ujumbe mfupi wa maneno (meseji)? Ni kwanini**

- Readability, literacy, screen size, does somebody reads it for you?
- Usomekaji, uelewa, ukubwa wa kioo cha simu, Je kuna mtu anakusomea
- Do you like sending sms? Why?
- Je mnapenda kutuma meseji? Kwanini
- How many promotion SMS do you get? What do you do with them (read/delete)? Why?
- Je, mnapata kiasi gani cha meseji za promosheni? Mnazifanyia nini? (kusoma/kufuta)? Kwanini?
- Does your Inbox sometimes get so full that you cannot receive new messages?
- Je, kuna muda simu zenu zinajaa meseji kiasi cha kushindwa kupokea meseji mpya?

**15. Have you ever used the mobile phone to get information on health or nutrition? Please explain? (seek and receive information)**

**Je mmewahi kupata taarifa za afya au lishe kupitia simu ya mkononi? Tafadhali elezea?**

- What information?(e.g; breast feeding, illness, medication)
- Ni taarifa gani? (Mfano; Unyonyeshaji, ugonjwa, matibabu)
- How? (e.g. automate messages)
- Kivipi? (Mfano;Meseji za moja kwa moja (automatic sms))
- Contact the health worker, arrange an appointment, call relative/friends in health emergencies/labour, etc.?
- Kuwasiliana na muhudum wa afya, kupanga miadi (appointment), kumpigia ndugu/rafiki wakati wa dharura inayohusu afya/uchungu, n.k.

**16. In your opinion, can mobile phones help pregnant women to get access to information about nutrition? How?**

**Kwa mtazamo wenu, simu za mkononi zinaweza kuwasaidia akina mama wajawazito kupata taarifa za lishe? Kivipi?**

- What kind of information? Why?
- Aina gani ya taarifa? Kwanini?

**17. Have you ever received automated messages with health information for yourself or your family? (If they have not, ask hypothetically how they would feel about it) (perceptions/trust of automated messages on health)**

**Je mmewahi kupokea meseji za moja kwa moja (automated) zenye taarifa za afya kwa ajili yenu au familia? (kama hawajapokea, uliza wangejisikiaje kuzipokea) (mitazamo/kuamini meseji za moja kwa moja (automated) kuhusu afya**

- From whom? (government, NGO, Company)
- Kutoka kwa nani? (Serikali, Asasi zisizo za kiserikali, kampuni)
- How did you/would you feel about automated messages?
- Mlifanyaje/Mngejisikiaje kuhusu meseji za moja kwa moja?
- Perceived as useful, why? Why not?
- Mnazichukulia kama zina umuhimu? Kwanini? Kwanini hapana?
- Trust in information, Why/Why not? What makes information trustworthy?
- Kuamini taarifa, kwa nini/kwanini hapana? Je, ni nini kinafanya taarifa hiyo iwe yakuaminika?
- Influence whether you perceive the messages as useful (e.g. who sends it/where information comes from, personalised to individual situation, frequency, best time to receive the message during the day)
- Kitu gani kinawashawishi kuona meseji hizi ni za muhimu (mfano: mtumaji/taarifa zinapotoka, inayokuhusu moja kwa moja, kwa kujirudia rudia, muda muafaka wa kupokea meseji.
- Are there other channels for information you would prefer? (Radio, TV?)
- Je kuna vyanzo vingine vya taarifa ambavyo mngependelea? (radio, televisheni)

**18. Do you think your husband would find automated messages with information on nutrition for pregnancy useful? Why/Why not?**

**Je, mnadhani waume zenu wataona umuhimu wa meseji za moja kwa moja kuhusu suala zima la ujauzito? Kwanini? Kwanini hapana?**

- How would you feel about it?
- Mtalichukuliaje suala hilo?

**Thank you. Do you have any questions?**

**Asante. Je mna swali lolote?**

## Topic guide for focus group discussion with elderly women (do not need to own mobile phone)

### Purpose:

- Understand current information seeking behaviours and practices related to child feeding

### 1. Warm-up questions

How long have you lived in this village? With whom do you live? Are there any small children in your household? How old are they?

### 2. Information about nutrition

#### 1. What do people in this area usually eat on a typical day?

**Kwa kawaida watu wa eneo hili huwa wanakula nini?**

#### 2. In your opinion, what makes a good diet? Why? (Knowledge, get details)

**Kwa mtazamo wenu, chakula bora ni kipi? Kwanini?**

- Prompt: What types of foods
- **Dadisi: Ni aina gani za vyakula**
- Number of meals a person has per day
- **Idadi ya milo kwa siku**
- Size of portion per meal
- **Kiasi cha chakula kwa kila mlo**
- Differences between good diet for men/women, pregnant and adults/children (if same food, is it cut in smaller pieces for children, or mashed, or less spicy)
- **Utofauti wa chakula bora kati ya wanaume/wanawake, wajawazito na watu wazima/watoto (kama ni chakula kile, je kinakatwa vipande vidogo kwa ajili ya watoto wadogo, au kusagwa, au kupunguzwa viungo)**
- What do you value in a diet (quantity of food? Quality of food? Type of food?) Why?
- **Vitu gani mnathamini katika mlo (wingi wa chakula? ubora wa chakula? Aina ya chakula?) kwanini?**

#### 3. Would you describe the diets of people in this community as a good diet? Why? Why not? (Practice)

**Je, mnafikiri kwamba mlo wa watu katika jamii hii ni bora? Ni kwanini? Ni kwanini sio? (Practice)**

- Reasons for not having a good diet: Choice, barriers, preference, taste (e.g. don't have money to buy food, limited access to food, they have no influence on what type of food is purchased as somebody else buys the food)?

- Sababu za kutokuwa na mlo bora: Uchaguzi, vikwazo, upendeleo, Ladha, (Mfano, kutokuwa na hela ya kununua chakula, ugumu katika upatikanaji wa vyakula, kutokuwa na maamuzi juu ya ununuzi wa vyakula kwasababu mtu mwingine ananunua chakula)?
- Think about different meals during the day
- Fikiria milo tofauti kwa siku.

4. **What do you think is important for babies to eat to stay healthy and grow well? What do you plan to do? Why? (knowledge, beliefs)**

**Ni kitu gani mnafikiri ni muhimu kwa watoto kula ili kuwa na afya na ukuaji mzuri? Mna mpango wa kufanya nini? Ni kwanini (uelewa, Imani)**

- What is the first food a baby should get after delivery and why? And when? (Breastfeeding, colostrum, other food or drinks as first food, and when and why? (e.g. due to problems breastfeeding or beliefs)
- Ni chakula gani mtoto anatakiwa apate baada tu ya kuzaliwa na kwanini? Na muda gani (kunyonyesha, dang'a-maziwa ya mwanzo ya njano, vyakula vingine au vinywaji kama chakula cha mwanzo, wakati gani na kwanini?) (mfano kutokana na matatizo ya unyonyeshaji au imani)
- In the first 6 months after birth? (breastfeeding; whether they believe a baby needs other food/drink)
- Miezi sita ya mwanzo baada ya kujifungua, (kunyonyesha; kama anaamini mtoto anahitaji vyakula/vinywaji vingine)
- In the first year of life? (ask about the age at which the baby needs to get food and drinks other than breastmilk; type of food)
- Ndani ya mwaka mmoja? (uliza kuhusu umri ambao mtoto anatakiwa aanze kupata chakula na vinywaji vingine tofauti na maziwa; aina ya chakula.
- What foods/drinks do people give to children above 6 months of age in this area? Why?
- Ni aina gani ya vyakula/vinywaji watu huwapa watoto wenye umri zaidi ya miezi sita katika eneo hili? kwanini?
- Have there been any changes in the types of foods/drinks that children above 6 months get these days compared when you were a young mother? Why has there been changes?
- Kumekuwa na mabadiliko yoyote katika aina za vyakula au vinywaji ambavyo watoto wenye umri zaidi ya miezi sita wanapata siku hizi ukilinganisha na kipindi mlipokua akina mama? Kwanini Kumekua na mabadiliko?

5. **How do you know that a child is growing well? (signs of under nutrition)**

**Je, mnajuaje kuwa ukuaji wa mtoto ni mzuri? (Dalili za utapiamlo)**

- Weight gain, height, cognitive stage of development
- Kuongezeka uzito, urefu, uwezo wa ubongo kufanya kazi
- Girl/boy
- Msichana/Mvulana
- What do parents in this village do when they think the child is not growing well?
- Je, wazazi wanafanya nini wanapogundua ukuaji wa mtoto sio mzuri?

- Who do they ask for help?
- Ni nani mnamuomba msaada?

6. **What do you recommend to a mother when her child is not growing well? What should she do?**

**Mnatoa ushauri gani kwa mama ambaye mtoto wake hakui vizuri? Afanye nini?**

- Whom should she ask for advice?
- Apate ushauri kwa nani?
- What type of food should she feed?
- Aina gani ya chakula amlishe mtoto?

7. **Where do people usually go when they have a health problem?**

**Kwa kawaida watu huenda wapi wanapokua na matatizo ya kiafya?**

- Who do people go to? (e.g. traditional healer, pharmacy, dispensaries, knowledgeable person, hospital) Why?
- Huenda kwa nani? (mfano mganga wa kienyeji, duka la madawa, zahanati, mtu mwenye uelewa/ujuzi, hospitali) Kwanini?
- Barriers to access to health facilities (probe for different levels from dispensaries to hospitals) (e.g. cost, distance, waiting times, staff actually at facilities, refusal of referral, medication available at facilities, transport, accompanying family members)
- Vikwazo katika kufikia vituo vya afya. (dadisi utofauti uliopo kati ya zahanati na hospitali) (mfano gharama, umbali, muda wa kusubiri, uwepo wa wahudumu, kutopewa rufaa, upatikanaji wa dawa, usafiri, kusindikizwa na wanafamilia)

8. **Who in this village gives young mothers guidance on how to feed and care for baby?**

**Ni nani anayetoa ushauri kwa akina mama juu ya lishe na utunzaji wa watoto katika kijiji hiki?**

- Whose advice do mothers trust
- Akinamama huamini ushauri kutoka kwa nani

9. **In this area, who in the household usually determines what foods the household eats?**

**Katika eneo hili, ni nani anayefanya maamuzi juu ya chakula gani kiliwe katika kaya?**

- Who purchases (mother, grandmother, father, grandfather etc.), Why?
- Nani anayenunua (bibi, mama, baba, babu, n.k) kwanini?
- Who decides what food is bought? Why?
- Nani anayefanya maamuzi katika ununuzi wa chakula? Kwanini?
- Who decides what food is eaten (mother, grandmother, father, grandfather etc.), Why?

- Nani anayefanya maamuzi ya chakula gani kiliwe? (bibi, mama, baba, babu, n.k) kwanini?
- Who decides how much everybody gets (mother, grandmother, father, grandfather etc.), Why?
- Nani anayefanya maamuzi juu ya kiasi cha chakula kila mwanakaya apate? (bibi, mama, baba, babu, n.k) kwanini?
- If men decide, what happens if a wife want to buy something different from what men want or others in your household want you to buy?
- Kama mwanaume amefanya maamuzi, nini kitatokea endapo mwanamke au mke atafanya manunuzi tofauti na alivyo agizwa na mume au wanakaya wengine wanavyotaka?

**10. Where do people in this area usually go to get information on how to eat well to stay healthy?**

**Kwa kawaida watu wa eneo hili wanapata wapi taarifa kuhusu ulaji bora ili kuwa na afya nzuri?**

- Who? (e.g. health worker, family, NGOs, radio/TV)? Why?
- Nani? (mfano: mhudumu wa afya, familia, asasi zisizo za serikali, radio na luninga) Kwanini?
- What type of information is available?  
Ni aina gani ya taarifa hupatikana
- Do you seek advice from different sources and compare them?
- Je, unatafuta ushauri kutoka vyanzo tofauti na kuweza kulinganisha?

**11. How easy or how difficult is it for people in this area to access information about nutrition?**

**Je, kuna urahisi au ugumu wowote kwenye upatikanaji wa taarifa zinahusiana na lishe katika eneo hili? Kwanini?**

- Barriers to access
- Ugumu wa upatikanaji.
- Best way to get information (channels)
- Njia nzuri zaidi ya kupata taarifa.
- Time of day/week do they want information (e.g. Saturdays)
- Muda wa siku au wiki ambao wangependa kupata taarifa (mfano jumamosi)

**12. In your opinion, is there any information on nutrition that is missing in your area? (ask for details)**

**Kwa mtazamo wako, kuna taarifa za lishe zinazokosekana katika eneo hili? Uliza kwa taarifa zaidi.**

- Breastfeeding
- Unyonyeshaji
- Preparing food
- Utayarishaji wa chakula
- Food for different age groups? Do you know for all ages?

- Chakula kwa rika tofauti? Je, unafahamu kwa rika zote?

**Thank you. Do you have any questions?**

**Ahsante. Mna maswali yoyote?**

## Topic guide for focus group discussion with fathers who own mobile phones

### **Purpose:**

- Understand fathers perceptions of and attitude towards their wives/partners mobile phone use
- Understand current information seeking behaviours and practices related to child feeding

### 1. Warm-up questions

How long have you lived in this village? Whom do you live with?

### 2. Information about mobile phone use

#### 1. Tell me a little about your mobile phone and how you use it.

##### **Tafadhali nieleze kwa ufupi juu ya simu zenu za mkononi na jinsi mnavyoitumia.**

- What do you use it for? (voice calls, SMS, internet, WhatsApp, Facebook)
- **Kwa matumizi gani? (kupiga simu, Meseji, Mtandao wa intaneti, Mitandao ya kijamii kama whatsapp, facebook)**
- What do you like best?
- **Ni kipi mnakipenda zaidi?**
- How often do you use? (frequency)
- **Mnazitumia mara ngapi? (idadi)**
- What times of the day do you usually use the phone?
- **Ni muda gani kwa siku mnazitumia simu?**
- Do you use different SIM cards? Why? How do you decide when to use what SIM card? Do you share SIM cards?
- **Je, mnatumia line zaidi ya moja? Ni kwanini? Je mnaamua juu ya aina gani ya line ya kutumia? Je mnatumia line hii zaidi ya mtu mmoja?**

#### 2. What is your opinion of the mobile network you use?

##### **Je, nini mtazamo wenu juu ya mitandao ya simu mnayotumia?**

- Reason for choosing: costs, promotion, coverage
- **Sababu: Gharama, promosheni, upatikanaji**
- What do you like/don't like about them?
- **Je, mnapenda/hampendi nini juu ya mtandao huu?**
- How many promotion sms do you get? What do you do with them (read/delete)? Why?
- **Je mnapokea kiasi gani cha za meseji za matangazo? Je, mnafanya nini ukishazipokea? (Kusoma/Kufuta) Kwanini?**

#### 3. Do many people in this village own a mobile phone?

##### **Je, umiliki wa simu katika kijiji hiki ukoje?**

- More men than women. Why?
- **Wanaume wengi kuliko wanawake. Kwanini?**
- Does your wife (potentially also ask about daughter) own a mobile phone? What do you think about it?

- Je, mke wako (mtoto wako wa kike) anamiliki simu ya mkononi? Unachukuliaje swala hili?
- Do you share it? How does it work?
- Je Mnatumia simu zaidi ya mtu mmoja? Mnaitumiaje?
- If your wife does not own a mobile phone, why not?
- Je, kama mke wako hamiliki simu ya mkononi, kwanini?

**4. Have you ever used the mobile phone to get information on health or nutrition? Please explain?**

**Je mmewahi kupata taarifa za afya au lishe kupitia simu za mkononi? Tafadhali elezea?**

- What information? Why?
- Ni taarifa gani? Kwanini?
- How? (e.g. automated messages)
- Kivipi (mfano, Meseji za moja kwa moja (automatic sms)
- Contact the health worker, arrange an appointment, call relative/friends in health emergencies/labour, etc.?
- Kuwasiliana na muhudum wa afya, kupanga miadi (appointment), kuwapigia ndugu/rafiki wakati wa dharura inayohusu afya/uchungu, n.k.

**5. Have you ever received automated messages with health information for yourself or your family? (If they have not, ask hypothetically how they would feel about it) (perceptions/trustin automated messages on health)**

**Je mmewahi kupokea meseji za moja kwa moja (automated) zenye taarifa za afya kwa ajili yako au familia? (kama hawajapokea meseji za moja kwa moja, waulize watajisikiaje wakizipokea (mitazamo/kuamini meseji za moja kwa moja (automated) kuhusu afya**

- From whom? (government, NGO, Company)
- Kutoka wapi?(Serikali, Asasi zisio za kiserikali, kampuni)
- How did you/would you feel about automated messages?
- Mlijisikiaje/Mgejisikiaje kuhusu meseji za moja kwa moja?
- Perceived as useful, why? Why not?
- Mtazichukulia kama zina umuhimu, kwanini? Kwanini hapana?
- Trust in information, Why/Why not? What makes information trustworthy?
- Kuamini taarifa, kwanini? Kwanini hapana? Nini kinafanya taarifa iwe ya kuaminika?
- Influence whether you perceive the messages as useful (e.g. who sends it/where information comes from, personalised to individual situation, frequency, best time to receive the message during the day)
- Vitu gani vinakushawishi kuona meseji hizi ni za muhimu (mfano: mtumaji/taarifa zinapotoka, inayokuhusu moja kwa moja, kwa kujirudia rudia, muda muafaka wa kupokea meseji.
- Are there other channels for information you would prefer? (radio, TV?)
- Kuna vyanzo vingine vya taarifa ungependelea? (radio, luninga?)

**6. Do you think your wife would find automated messages with information on child health and nutrition useful? Why/Why not?**

**Je, mnadhani wake zenu wataona umuhimu wa meseji za moja kwa moja kuhusu suala zima la afya ya mtoto na lishe? Kwanini?/kwanini hapana?**

- How would you feel about it?
- Je, mtalichukuliaje suala hilo?

### 3. Information about nutrition

**7. What do you and your family usually eat on a typical day?**

**Kwa kawaida wewe na familia zenu huwa mnakula nini?**

**8. In your opinion, what makes a good diet? Why? (Knowledge)**

**Kwa mtazamo wenu, chakula bora ni kipi?**

- Prompt: What types of foods
- **Dadisi: Ni aina gani za vyakula**
- Number of meals a person has per day
- **Idadi ya milo kwa siku**
- Size of portion per meal
- **Kiasi cha chakula kwa kila mlo**
- Differences between good diet for men/women, pregnant and adults/children (if same food, is it cut in smaller pieces for children, or mashed, or less spicy)
- **Utofauti wa chakula bora kati ya wanaume/wanawake, wajawazito na watu wazima/watoto (kama ni chakula kile , je kinakatwa vipande vidogo kwa ajili ya watoto wadogo, au kusagwa, au kupunguzwa viungo)**
- What do you value in a diet (quantity of food? Quality of food? Type of food?) Why?
- **Vitu gani mnathamini katika mlo (wingi wa chakula? ubora wa chakula? Aina ya chakula?) kwanini?**

**9. Would you describe your own/your household's diet as a good diet? Why? Why not? (Practice)**

**Je, unafikiri kwamba mlo wako/mlo wa kaya yenu ni bora? Ni kwanin? Ni kwanini sio? (Practice)**

- Reasons for not having a good diet: Choice, barriers, preference, taste (e.g. don't have money to buy food, limited access to food, they have no influence on what type of food is purchased as somebody else buys the food)?
- **Sababu za kutokuwa na mlo bora: Uchaguzi, vikwazo, upendeleo, Ladha, (Mfano, kutokuwa na hela ya kununua chakula, ugumu katika upatikanaji wa vyakula, kutokuwa na maamuzi juu ya ununuzi wa vyakula kwasababu mtu mwingine ananunua chakula)?**
- Think about different meals during the day
- **Fikiria milo tofauti kwa siku.**

**10. In this area, who in the household usually determines what foods the household eats?**

**Katika eneo hili, nani anayefanya maamuzi ni chakula gani kiliwe katika kaya?**

- Who purchases (mother, grandmother, father, grandfather etc.), Why?
- **Nani anayenunua (bibi, mama, baba, babu, n.k) kwanini?**
- Who decides what food is bought? Why?
- **Nani anayefanya maamuzi katika ununuzi wa chakula? Kwanini?**
- Who decides what food is eaten (mother, grandmother, father, grandfather etc.), Why?

- Nani anayefanya maamuzi ya chakula gani kiliwe? (bibi, mama, baba, babu, n.k) kwanini?
- Who decides how much everybody gets (mother, grandmother, father, grandfather etc.), Why?
- Nani anayefanya maamuzi juu ya kiasi cha chakula kila mwanakaya apate? (bibi, mama, baba, babu, n.k) kwanini?
- If men decide, what happens if your wife want to buy something different from what you want or others in your household want you to buy?
- Kama mwanaume umefanya maamuzi, kitatokea nini endapo mwanamke au mke atafanya manunuzi tofauti na ulivyo muagiza au wanakaya wanavyotaka?

**11. What do you think is important for babies to eat to stay healthy and grow well? Why? (Knowledge, beliefs)**

**Ni kitu gani mnafikiri ni muhimu kwa watoto kula ili kuwa na afya na ukuaji mzuri? Mna mpango wa kufanya nini? Ni kwanini (uelewa, Imani)**

- What is the first food a baby should get after delivery and why? And when? (breastfeeding, colostrum, other food or drinks as first food, and when and why? (e.g. due to problems breastfeeding or beliefs)
- Ni chakula gani mtoto anatakiwa apate baada tu ya kuzaliwa na kwanini? Na muda gani (kunyonyesha, dang'a-maziwa ya mwanzo ya njano, vyakula vingine au vinywaji kama chakula cha mwanzo,wakati gani na kwanini?) (mfano kutokana na matatizo ya unyonyeshaji au imani)
- In the first 6 months after birth? (breastfeeding; whether they believe a baby needs other food/drink)
- Miezi sita ya mwanzo baada ya kujifungua, (kunyonyesha; kama anaamini mtoto anahitaji vyakula/vinywaji vingine)
- In the first year of life? (ask about the age at which the baby needs to get food and drinks other than breastmilk; type of food)
- Ndani ya mwaka mmoja? (uliza kuhusu umri ambao mtoto anatakiwa aanze kupata chakula na vunywaji vingine tofauti na maziwa; aina ya chakula.
- When should a baby be given foods and drinks other than breastmilk?
- Je, ni wakati gani mtoto anatakiwa kupewa vyakula na vinywaji tofauti na maziwa ya mama?
- Boy/girl child difference
- Tofauti kati ya mtoto wa kike /wakiume

**12. How were your child/ren fed when they were babies?**

**Je ni namna gani mtoto/watoto wenu walilishwa walipokua wadogo?**

- Who made the decision on how to feed them? (e.g. wife, grandmother, you). Why?
- Nani alifanya maamuzi juu ya namna ya ulishaji? (mfano: mke, bibi, wewe) kwanini?
- Were you involved in this decision? How?
- Je, mlishirikishwa kufanya maamuzi hayo? Kivipi?
- (if father made decision did he involve the mother, how?)
- (kama mlifanya maamuzi mliwashirikisha akina mama, kivipi)

**13. What do you think shoulda pregnant woman eat to stay healthy?**

**Je, mnadhani ni nini mama mjamzito anatakiwa kula ili awe na afya bora?**

- Ask whether she should eat differently because she is pregnant? Why? (e.g. food taboo, nausea, do not want the baby to get too big)
- Uliza kama anatakiwa kula tofauti kutokana na ujazito wake? Kwanini? (Mfano Miiko ya chakula, kichefuchefu, hawataki mtoto awe mkubwa mno)

**14. Where do people in this area usually go to get information on how to eat well to stay healthy?**

**Kwa kawaida watu wa eneo hili wanapata wapi taarifa kuhusu ulaji bora ili kuwa na afya nzuri?**

- Who? (e.g. health worker, family, NGOs, radio/TV)? Why?
- Nani? (mfano: mhudumu wa afya, familia, asasi zisizo za serikali, radio na luinga) Kwanini?
- What type of information is available?
- Ni aina gani ya taarifa hupatikana?
- What sources of information do people prefer/trust? Why?
- Chanzo kipi cha taarifa watu wanapendelea au wanakiamini? Kwanini?

**15. How easy or how difficult is it for people in this area to access information about nutrition?**

**Je, kuna urahisi au ugumu wowote kwenye upatikanaji wa taarifa zinahusiana na lishe katika eneo hili? Kwanini?**

- Barriers to access
- Ugumu wa upatikanaji.
- Best way to get information (channels)
- Njia nzuri zaidi ya kupata taarifa.
- Time of day/week do they want information (e.g. Saturdays)
- Muda wa siku au wiki ambao wangependa kupata taarifa (mfano jumamosi)

**Thank you. Do you have any questions?**

**Ahsante. Mna maswali yoyote?**

## Annex E Coding scheme used for the data analysis

No.	Codes	Sub-codes	Description
<b>Access to, use of and attitude towards mobile phone</b>			
1	Mobile phone ownership	-Men own -Women own	What is the proportion of ownership; barriers to ownership; any group that specifically lacks access? Include any inference to reasons for/benefits of ownership (self-reliance, ease of communication) or lack thereof
2	Men's attitude towards female mobile phone use	-Encouragement -Control of use -Restriction on use	Include information on men's attitudes towards female use of mobile phones. How access is restricted or encouraged?
3	Attitude towards mobile phone operators	-Tariffs -Promotions and benefits -Complaints	What do people feel about network operators and reasons for preferring a particular network (include names of network, problems with network, complaints and positive/negative responses)
4	Mobile phone use	-Men use -Women use	User behaviour - what purpose is the phone used for (business, family, emergency, etc.); gender differences in use
5	Phone sharing	-Frequency -Barriers to - Reasons for sharing	How common is the practice of sharing phones and why? (include responses and attitudes from husbands sharing phones with partners/spouse; men/women sharing phones with family)
6	Call vs sms	-SMS popularity - Call popularity - Gender difference	What functions are liked more and why (record any inference to preferences and comfort level in using particular features) especially SMS
<b>Potential barriers to and facilitators of the uptake of mobile phone-based messages</b>			
1	Electricity	-Phone charging	Access and availability for charging phones (include duration of electricity availability and when it is available; where do people go to charge their phones, fee for charging)
2	Literacy	-Levels of literacy - Technical literacy	Ease in reading or writing SMS, using functions of phone
3	Mobile spam	-Frequency of spam -Response to spam	Received spam (yes/no); how do they feel about it (attitude and response)
4	Multiple SIM cards	-Dual slot phone ownership	Reasons for multiple SIM use and what provider is used for different purposes

		-Reasons	
5	Network coverage		Network access in different locations and at different times
6	Phone hardware	-Problems with the handset -Myths about use in adverse weather	Problems with hardware- what do people do when they have hardware problems; where do they go? Do they have particular beliefs about avoiding its use at particular times (night, raining, power outage)
7	Credit for top up	- Access to money - Access to mobile kiosk	Availability of money and mobile kiosk for buying vouchers; what do people do/not do when they run out of credit?
8	SMS on nutrition	-Liked/not liked -Men's perception on getting nutrition message -Women's perception on getting nutrition message -Health workers' perception on messages	-Positive/Negative responses about receiving nutrition messages and the reasons for it -How do they feel about these messages and what do they do (tell others, delete)? -Perceived benefits, if any
9	Attitude towards subscription	-Willingness -Reluctance - Suspicion	Reasons for subscribing/not subscribing to nutrition messages (money, time, any preconceived notions such as losing credit, etc.)
<b>Information needs and information seeking behaviour</b>			
1	Information sharing	-on Nutrition -On other topics	Do men and women share information with/amongst each other, why or why not?
2	Breastfeeding problems	-Problems -Beliefs about breastfeeding - Employment	Concerns related to breastfeeding- sores, milk not coming out, any other Are there any preconceived notions about breastfeeding that also lead to these concerns?
3	Complementary feeding	-Appropriate foods -Timing - Problems	Reasons for early/timely/late start to complementary feeding
4	Information source	- Own Mother/mother in law -Radio	Different sources of getting information on nutrition (Note if people use different sources for different purposes)

		<ul style="list-style-type: none"> <li>-Health worker</li> <li>-Community</li> <li>-Any other</li> </ul>	
5	Information needs-by individual	<ul style="list-style-type: none"> <li>-Pregnant women</li> <li>-Breastfeeding mothers</li> <li>-Health worker</li> <li>-Adolescent pregnant women</li> <li>-Elderly women/grandmother</li> <li>-Fathers</li> </ul>	<ul style="list-style-type: none"> <li>-Regarding diet, care practices, vitamins, any other</li> <li>-Breastfeeding problems, frequency, any other</li> <li>-Any needs identified for training, knowledge about nutrition and care practices</li> <li>-Needs identified regarding early pregnancy, dietary diversity, etc.</li> <li>-Any needs identified related to breastfeeding, pregnancy behaviours, dietary diversity or any other</li> </ul>
6	Information needs-topics	<ul style="list-style-type: none"> <li>-Breastfeeding</li> <li>-Complementary feeding</li> <li>-Dietary diversity</li> <li>-Food preparation</li> <li>-Nutrition advice in case of problems</li> <li>-Vegetables pesticides</li> </ul>	What kinds of information do women seek regarding these issues (time to start, what to give to the baby, questions and concerns).
6	Trust information/advice	<ul style="list-style-type: none"> <li>-Radio</li> <li>-Family members</li> <li>-Health worker</li> </ul>	Advice is trusted when and from whom and why? How do they access this advice and do they cross-check it?
7	Utilisation of information	<ul style="list-style-type: none"> <li>-Barriers to</li> </ul>	How do they follow the advice received?
8	Information timing	<ul style="list-style-type: none"> <li>-Time of day</li> <li>- Frequency</li> </ul>	Best time to receive information (days, month, and time of the day)?
	Preferred channels for information	<ul style="list-style-type: none"> <li>-SMS</li> <li>- Personal interaction</li> <li>-Practical demonstration</li> </ul>	How do pregnant women/mothers want to receive information
11	Barrier to information seeking	<ul style="list-style-type: none"> <li>-Distance</li> <li>-Lack of time</li> <li>-Limited frequency</li> </ul>	<ul style="list-style-type: none"> <li>-Travel to particular sources such as clinics, health workers, hospitals etc.</li> <li>-Busy schedule (household work; farm work or business)</li> </ul>

		<ul style="list-style-type: none"> <li>-Limited information in community/village</li> <li>-Perceived capacity to uptake</li> <li>- Barriers to access for adolescents/very poor women</li> </ul>	<ul style="list-style-type: none"> <li>-Information available only at particular times or places (clinics, during antenatal visits, etc.)</li> <li>-Information not available in the village (include inference to issues on which information is sought)</li> <li>-Inability to understand the information (include reasons – literacy, information too technical, etc.)</li> </ul>
<b>Social, economic and environmental factors that may influence behaviour change related to child nutrition and nutrition during pregnancy</b>			
1	Alcohol	<ul style="list-style-type: none"> <li>-Frequency</li> <li>- Pregnant women/mothers</li> <li>- Men</li> <li>- Types of alcohol</li> <li>- Location</li> </ul>	Consumption of alcohol in the community, reasons and beliefs (also include if there are any community rules, prohibition)
2	Barriers-access to health services	<ul style="list-style-type: none"> <li>-Antenatal care</li> <li>-Access to medical services/hospitals</li> </ul>	How often do women use these services (include issues of staff availability and quality, distance, money, availability of transport, etc.)
3	Barrier-food-	<ul style="list-style-type: none"> <li>-Lack of money</li> <li>-Limited agricultural diversity</li> <li>- Availability of food</li> <li>-Lack of nutritious-fresh food</li> <li>- Spatial food access</li> <li>-Decision-making regarding food purchases</li> <li>-Traditional food beliefs</li> </ul>	<ul style="list-style-type: none"> <li>-Inability to purchase food (include responses and what people do, household budget allocation, etc.)</li> <li>-information on what crops are grown in the area</li> <li>What foods are mentioned? Reasons for non-availability (seasonality, money, distance, etc.)</li> <li>What foods are mentioned? Reasons for non-availability (seasonality, money, distance, etc.)</li> <li>What foods are eaten in the household? Why are they preferred (easier to afford, general fondness, health, etc.)</li> <li>-Household decision making (who pays for the food/buys the food and who decides what would be cooked/eaten)</li> <li>-Include any information on things women either actually avoid, or believe should be avoided, during pregnancy or breastfeeding. Include any comments on why these foods should be avoided, any previous beliefs that are no longer practised.</li> </ul>

			Foods people like to eat (that may or may not conflict with healthy eating)
4	Barrier-men	-Child care -Antenatal visits -HIV	Attitude of men in providing childcare and accompanying women for check-ups; HIV testing; beliefs about pregnancy
5	Barrier- food preference	-Female/male/child - Whose preferences count?	Foods people like to eat (that may or may not conflict with healthy eating)
6	Access and availability of WASH	-Water -Sanitation	Status of water and sanitation practices (record any inference to outbreak of diseases/health problems mentioned)
7	Barrier-mothers' time		Time allocation for food preparation, childcare and breastfeeding
8	M-projects	-WN (previous experience) - Birth registration - other health related m-projects - other m-projects (e.g. farming)	Other mobile phone-based services available such as mobile money, insurance, etc. (include names of the programmes)
9	Other nutrition projects	-Ongoing -Past - Donor	Any other projects being run by government, donors or grassroots organisations (record details of the organisations, target recipients and what they do?)