

KNOWLEDGE, ATTITUDES, AND PRACTICES OF
MATERNAL NUTRITION DURING PREGNANCY IN
SOLWEZI AND CHAVUMA DISTRICTS

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Abbreviations

ANC	Antenatal Care
BCC	Behaviour Change Communication
BMI	Body Mass Index
CARMMAZ	Campaign for the Accelerated Reduction of Maternal Mortality in Africa/Zambia
DCHO	District Community Health Office
CSH	Communications Support for Health
CSO	Central Statistics Office
HCP	Health Care Provider
HMIS	Health Management Information System
IDI	In-Depth Interview
IEC	Information Education Communication
IMR	Infant Mortality Rate
KAP	Knowledge Attitude and Practices
MDG	Millennium Development Goal
MMR	Maternal Mortality Rate
MNCH	Maternal Newborn Child Health
MOH	Ministry of Health
MUAC	Mid Upper Arm Circumference
NFNC	National Food and Nutrition Commission
NHSP	National Health Strategic Plan
NNM	Neonatal Mortality
NWP	North Western Province
PHO	Provincial Health Office
PNM	Perinatal Mortality
RHC	Rural Health Centre
USAID	United States Agency for International Development
UNZA	University of Zambia
UNZAREC	University of Zambia Research Ethics Committee
WHO	World Health Organization
ZDHS	Zambia Demographic and Health Survey

1. Introduction

The improvement of maternal nutrition during pregnancy is a key component of maternal and infant survival and of the overall development of any country, including Zambia. Maternal nutrition has been recognised for its importance in both the course and outcome of pregnancy (Can 1980). Maternal undernutrition may result in a greater deprivation of the foetus. The infant not only may be “light for dates” (underweight for age) but also has an increased risk of perinatal disability or death secondary to gross neurologic and developmental abnormalities (Can 1980). Good nutrition (a combination of energy, protein, iron, vitamin, sodium, and calcium requirements) plays a cardinal role in pregnancy.

Maternal nutrition during pregnancy is very important. The 2007 Zambia Demographic and Health Survey (ZDHS) reported maternal underweight (indicated by a body mass index, or BMI, of less than 18.5) at 10 percent in 2007, a decrease from 15 percent in 2002 (CSO et al. 2009). The latest ZDHS (CSO et al. 2009) contains no information on maternal nutrition assessment during pregnancy. However, anthropometric data on BMI and height and weight indicate that Zambian adult women in urban areas weigh slightly more than their rural counterparts. According to the 2007 ZDHS (CSO et al. 2009, 176), the mean BMI for rural women was 21.6, compared to 23.7 for urban women. The percentage of women with a normal BMI in Zambia’s rural and urban areas was 77.7 percent and 62.8 percent, respectively.

Low pre-pregnancy BMI is amongst the critical risk factors for poor birth outcomes and obstetric complications (WHO 2002). Furthermore, it has been established that the process of stunting amongst children occurs during the period from conception (during pregnancy) through the first two years of a child’s life; hence the important link between maternal nutrition during pregnancy and the health status of the newborn (WHO 2002). Access to good nutrition is a major and cross-cutting determinant of health. In Zambia, malnutrition underlies up to 52 percent of all under-5 deaths. The stunting rate in under-5 children currently stands at 45 percent, with 5 percent being acutely malnourished (wasted) and 15 percent being underweight. In addition, the rates of micronutrient deficiencies are high, with 53 percent vitamin A deficiency and 46 percent iron deficiency anaemia (NFNC 2003), while 4 percent of school-aged children are at risk of mild to severe iodine deficiency disorders (NFNC 2002).

Good maternal nutrition during pregnancy involves the consumption of a variety of foods that enable a woman to meet the nutritional requirements for herself and for the unborn baby. However, most women in Zambia cannot achieve the consumption of the daily micronutrients required by a pregnant woman from foods only. As such, micronutrient supplementation may be needed for most pregnant women in order to achieve optimal daily micronutrients requirements. The ZDHS reported low consumption of micronutrient supplementation—iron supplementation and vitamin A levels in pregnant and breastfeeding women were reported to be low in Zambia. Only 45 percent of women received a vitamin A supplementation post-partum, and only 44 percent of women took iron tablets for at least 90 days during their last pregnancy (CSO et al. 2009). However, recent information is unavailable on the occurrence of anemia in women—another risk factor for morbidity and mortality during pregnancy. Comparatively, the North Western Province is amongst the worst-performing provinces on maternal BMI. Approximately 14 percent of women in North Western Province have a BMI of less than the cutoff point of 18.5, as compared to the national average of 9.6 percent.

In addition to the issues surrounding nutrition, there is also the interlinked problem of diarrhoea facing children under the age of 5, who are amongst the most susceptible to morbidity and mortality resulting from unsafe water, sanitation, and hygiene, mainly through infectious diarrhoea (WHO 2002). In Zambia, diarrhoeal diseases are a major public health problem and continue to be amongst the top causes of morbidity and mortality, especially amongst children aged 5 years and under (MOH 2005). In 2007, the overall incidence of diarrhoea was 15.5 percent, with the peak occurring in children aged 6–23 months, at 37 percent (ZDHS 2007). Furthermore, the quality of drinking water is poor in Zambia. About 38 percent of the population have no access to safe water and sanitation

(LCMS 2010). In North Western Province, more than half (50.7 percent) of households have no access to safe water, 82 percent have no access to improved or safe toilet facilities, and only about 28 percent treat or boil their drinking water (LCMS 2010). As a result, many people suffer from waterborne diseases such as diarrhoea and cholera, and each year thousands of Zambian children die of preventable diarrhoeal diseases (Simpito 2000). In 2007, about 16 percent of children under the age of 5 suffered from diarrhoea in North Western Province—slightly above the national average of 15.5 percent in the two weeks preceding the survey.

Since 1992, the Zambian Government has been implementing significant health sector reforms aimed at strengthening health service delivery to improve the health status of Zambians. The achievements of these reforms put Zambia on course to achieve the Millennium Development Goals by 2015. The Ministry of Health (MOH), with technical and financial support from various partners, has been implementing various behaviour change communication (BCC) activities. Amongst these BCC activities are radio/TV messages on the importance of good maternal nutrition during pregnancy. It is expected that enhanced BCC programmes by the Government of the Republic of Zambia (GRZ) will translate into changes in population health-related behaviours. This change is expected to result in a measurable reduction in the practice of risky behaviours and increase the practice of healthy and ideal behaviours. BCC programmes encompass a broad range of activities and approaches that focus on the individual, community, and environmental influences on behaviour. More recently, its ambit has grown to encompass any communication activity in which the goal is to help individuals and communities select and practise behaviour that will positively affect their health.

Arising from the central position that maternal nutrition has in the health status of the population and particularly pregnant women, children, and breastfeeding women, the National Health Strategic Plan (NHSP) has identified maternal nutrition as a priority area amongst the crosscutting issues that would require a strengthened response, as outlined in the strategic objectives below:

- Strengthen maternal newborn child health (MNCH) interventions through the Campaign for the Accelerated Reduction of Maternal Mortality in Africa/Zambia strategy,
- Improve the availability of MNCH and nutrition commodities (e.g., family planning commodities, vaccines, therapeutic feeds),
- Strengthen community involvement in MNCH and nutrition services, and
- Mainstream nutrition in other key health sector interventions, such as maternal and adolescent health, HIV care, and tuberculosis; integrate management of childhood illnesses and non-communicable diseases (NHSP 2011–2015, 2011).

Despite the MOH implementing interventions aimed at improving the nutrition status of the pregnant woman and her unborn child, the North Western Province reports amongst the lowest maternal BMI index in Zambia. The BCC efforts implemented by the GRZ are conducted from health centres, through antenatal care (ANC) and under-5 clinics, and supported by the activities of many partners. There are also identified information gaps on the effectiveness of the BCC interventions: little research was available to provide insights about the knowledge, attitudes, and practices of maternal nutrition during pregnancy in North Western Province. Correspondingly, there was very little documented evidence on the facilitating factors and barriers of maternal nutrition amongst pregnant women in the province.

1.1. GRZ Behaviour Change Efforts

GRZ's ANC Services

Pregnant women are primarily reached with safe motherhood messages, including messages on nutrition, during ANC visits. ANC clinics are normally conducted weekly. During the ANC meetings, pregnant women are sensitised about early bookings and attending first visits with male partners. During the first visit, the women are counselled about HIV and how to prevent mother-to-child

transmission—the pregnant women are also given an HIV test during the early visits. ANC services include four routine visits, which occur at 8 weeks, 22 to 24 weeks, 32 to 34 weeks, and 36 to 38 weeks. During these visits, pregnant women are also given Fansidar tablets as part of intermittent preventive treatment in pregnancy.. The women are given nutrition supplements, including folic acid and ferrous tablets. Throughout the ANC meetings, women are educated on the importance of delivering at a health facility and how to plan for a safe facility delivery. The women are also educated on appropriate nutrition for pregnant women.

Activities of Safe Motherhood Action Groups

At the community level, GRZ implements safe motherhood activities through the activities of safe motherhood action groups (SMAGs), which are groups formed by men and women from within the community. SMAGs are trained to assist women during their pregnancy and to facilitate and encourage women to deliver in a health centre. SMAG members disseminate information to community members about pregnancy and child and family planning. In addition, SMAGs work to change local awareness of maternal health, sensitise the community on the importance and benefits of early ANC, and educate people on the benefits of preparing for birth and transferring to a health centre in advance to seek skilled and specialised care once in labour and during delivery. The groups also disseminate information about maternal and child nutrition. SMAGs have been specifically trained not to provide care, but to instead play an active role in recognising women and newborns who need care, providing referrals and assisting with transport as needed (MOH 2011).

Other Activities

Other BCC efforts implemented by the GRZ include the Your Health Matters (YHM) TV programme and radio and TV announcements in the community. YHM is a TV programme broadcast through the Zambia National Broadcasting Corporation. The programme discusses myriad topical health themes, including prevention and treatment of communicable and non-communicable diseases, and information on any new developments in the health sector.

2. Study Rationale

This study was conducted to provide information on current nutrition behaviours and the factors that facilitate and inhibit good nutrition behaviours amongst pregnant women in North Western Province, and to reveal how best to implement nutrition interventions aimed at improving maternal nutrition during pregnancy in the province. It was envisioned that the findings of this study would facilitate the strengthening of programmes that focus on improving maternal nutrition during pregnancy.

2.1 Research Objectives

This research aimed to investigate the target audiences' knowledge, attitudes, and practices related to maternal nutrition during pregnancy and their response to existing nutrition BCC interventions.

The following were the specific objectives of this study:

a) Objective 1: General knowledge, attitudes, and behaviour

1. To evaluate nutritional behaviours of pregnant women (e.g., use of wild or local foods, cravings);
2. To investigate the knowledge and attitudes around the need for a balanced nutritional diet for pregnant women (e.g., impact on maternal and child health);
3. To find out the factors that promote a nutritional diet for pregnant women (e.g., family and community support, food availability, education of good practices);
4. To investigate the major sources of drinking water and hygiene practices amongst pregnant women; and
5. To explore the factors that inhibit a nutritional diet for pregnant women (e.g., lack of support, education, and food availability; contributing social issues such as alcoholism, depression, and gender violence; and food taboos/customs).

b) Objective 2: Response to BCC efforts

1. To find out knowledge of existing or recent BCC efforts on maternal nutrition;
2. To investigate behaviour change or behavioural intent in maternal nutrition reportedly due to BCC efforts; and
3. To develop recommendations to improve BCC efforts.

3. Research Methodology

3.1. Study Design

This study employed a qualitative approach consisting of in-depth interviews (IDIs) and focus group discussions (FGDs) with key audiences. A total of 26 IDIs were conducted with the following audiences: 1) pregnant women, 2) male partners of pregnant women, and 3) health workers. The interviews were conducted in two districts of North Western Province, namely Chavuma and Solwezi. Table 1 shows the segmentation plan that was used for prioritising districts for inclusion in this study. The study also conducted six FGDs with pregnant women within the selection criteria.

3.2. Study Audiences

The primary audience for this study was women aged 18–49 in Solwezi and Chavuma. They participated in interviews on current nutrition behaviour practices; knowledge about maternal nutrition; sources of information, support, and knowledge of activities of maternal nutrition interventions in the selected districts. FGDs focused on similar topics as those discussed during IDIs, but FGDs focused more on community-level perceptions and generally accepted practices regarding many of the various issues discussed during IDIs.

The secondary audiences for this study—who participated in IDIs—were male partners of pregnant women and health workers who provided insights on prevailing practices and any support and interventions in progress to improve maternal nutrition during pregnancy.

3.3. Study Location

Selection of Districts

In order to facilitate the prioritisation of districts for this research, this study found that information on BMI for pregnant women—and specifically the birth weight for children by district—was not reported in the latest ZDHS (CSO et al. 2009). In addition, no information was provided on the maternal mortality ratio by district. Therefore, the proxy indicator of under-5 weight was used to help assess the nutrition status of districts in North Western Province and to facilitate the prioritisation of districts for the study. Two districts, Solwezi and Chavuma, were selected based on performance on under-5 underweight prevalence. Chavuma was selected based on its low prevalence and percentage decline of under-5 underweight prevalence. Solwezi was selected as the low-performing district based on underweight rates. Table 1 shows under-5 underweight in North Western Province by district.

Table 1: Under-5 Underweight Rates by District and Year

District	Underweight Rate		% Relative Change
	2009	2011	
Chavuma	1%	0.7%	-30%
Kabompo	7%	10.8%	54%
Kasempa	0.6%	2.3%	283%
Mufumbwe	4%	4.9%	23%
Mwinilunga	5%	8.7%	74%
Solwezi	4%	11.7%	193%
Zambezi	2%	6.2%	210%

Source: North Western Province. (2012). *Health Management Information System, 2011 Annual Report*.

Selection of Health Centres and Participants

Within each district, three health centres were purposely selected for inclusion in the study. The intent was to select the high- and low-performing health centres based on their performance on the selected

under-5 children and nutrition indicators—to include two low-performing districts and one high-performing district. The selection of the health centres was done in consultation with the District Community Health Offices (DCHO). Table 2 provides the segmentation plan that was used for the interviews.

Pregnant women of 24 weeks gestation and above and male partners were purposively selected, and health workers were selected based on availability and willingness to participate. Pregnant women of 24 weeks gestation and above were specifically selected to participate in this study because they were expected to be adequately positioned to provide a wider range of experiences and information pertaining to pregnancy and nutrition compared to women who had recently become pregnant. Furthermore, they were expected to have been exposed to nutrition interventions and messages through ANC visits by that time (CSO et al. 2009), allowing them to also provide relevant feedback about the BCC interventions.

Purposive sampling was employed to select study participants: health workers who work in maternal health and nutrition departments, pregnant women who were of 24 weeks gestation and above, and male partners of pregnant women. All the respondents were between the ages of 18 and 49. There were six participants for each FGD. A total of 60 participants were enrolled in the study. Selection of pregnant women was mainly done by the health centre prior to the date of the interviews. The information about the selection procedure was communicated to the health centres well in advance through the DCHO. A screening tool, described in the next section, was used to help with the selection process. The primary audience, pregnant women of 24 weeks gestation and above, was selected during ANC service at the health facility and/or communities near the health centres. The followings steps were used to select participants at the health centre:

1. Health centre staff identified potential participants based on recruitment criteria.
2. Health centre staff introduced potential participants to the research team.
3. The research team conducted independent screening of potential participants to assess eligibility.
4. Eligible participants were asked if they were willing to participate based on the information sheet and consent procedures explained to them.
5. Willing participants were identified, and a time was set up for participants to be interviewed.

Table 2: Sampling Matrix for IDIs and FGDs (by District and Audience)

District	Methods	Pregnant Women \geq 24 Weeks Pregnant, \geq 18 Years	Male Partners of Pregnant Women \geq 24 Weeks Pregnant, \geq 18 Years	Health Care Workers at ANC Clinics	Total	Analysed
Solwezi	IDIs	6	3	3	12	13
	FGDs	3	0	0	3	3
Chavuma	IDIs	6	3	3	12	12
	FGDs	3	0	0	3	3
Total	Total IDIS	12	6	6	24	24
	Total FGDs	6	0	0	6	6
	All	18	6	6	30	31

3.4. Data Collection

Study Tools

The study used different interview guides for each of the three target audiences. The interview guides included an introduction, a few warm-up questions, a core section of questions related to maternal nutrition during pregnancy, and a wrap up. The interviews lasted an average of 45–60 minutes with each participant, and the FGDs lasted an average of 60–90 minutes.

Interview guides were originally written in English but were then translated on the spot into Kaonde, Luvale, and Lunda, which are the local languages in the selected study sites.

The interview guides were reviewed extensively by the GRZ team and the CSH Research, Monitoring and Evaluation team and were revised based on the feedback received. The study tools were piloted at Solwezi General Hospital, and further revisions were made to the tools based on the feedback received.

Training of Interviewers and Note Takers

The study used interviewers, note takers, and transcribers to collect the data, take notes, and translate the data. Everyone on the data collection team received training in conducting qualitative formative research by a team of GRZ staff, supported by CSH. During the training, the data collectors were familiarised with trends of maternal and child nutrition in Zambia, specifically in North Western Province, and were given an overview of the research study purpose and objectives. The training also covered data collection techniques, including interviewing skills, consent procedures, and ethical considerations and the pilot-testing of the tools.

The data collection team members were recruited based on their competence in conducting formative research and their competence in the language (Lunda, Luvale, and Kaonde) of the locations where the data collection was conducted.

Consent and Interview Procedures

For each interview, the potential participant was informed of the topic and objectives of the interview. A written consent/assent process was then used with each participant. Each participant received a copy of the information sheet and the consent/assent form to read, and was provided with a copy of the signed consent/assent form. In the cases where the participant was unable to read, the entire information sheet and consent/assent form was read to him/her by the interviewer.

The venue for the interview was chosen to ensure the privacy of the participant and to ensure that there was minimal noise so that the interview could be recorded.

Team Composition

The data collection team consisted of: an interviewer, who was responsible for interviewing and guiding the proceedings of the interviews; a note taker, who recorded and took notes during the interview; and a transcriber, who translated, transcribed, and typed the interview data. The notes were used to provide more immediate access to the IDI data in order to begin determining emerging themes, identify new questions to be incorporated into the interview guide, and develop the coding dictionary. The interviewers and note takers were supervised by GRZ staff with support from the CSH Research, Monitoring and Evaluation staff, who conducted field observations and spot checks, and assisted the team to follow the agreed-upon study procedures.

Two teams of five people (two interviewers, one note taker, and one supervisor) collected the data from the two districts, with two teams each covering one district.

Data Management

Digital recorders were used to record the data and, after the interview, the audio data were sent to the transcribers for transcription. All interviews were supposed to be transcribed verbatim, in the language of the respondents. However, some of the transcripts were presented in summarized notes.

Transcribed text was translated into English by experienced and trained bilingual translators. Most of the translated text was complete, not summaries of the transcribed original language text. Most of the IDIs were transcribed such that they kept the intent of the original statement, while writing in correct English. The translators ensured that the translations were consistent across all text.

Data Analysis

After data collection, translation, and transcription were completed, a team of GRZ staff and one research assistant, with support from a CSH research staff member, analysed the transcripts to identify emerging themes to develop the report.

Ethical Considerations

The study was approved by Zambia's Converge Research Ethics Board. To ensure confidentiality, participants were interviewed in a private location of their choosing. Furthermore, to ensure the confidentiality of study participants' information, all data and information collected were kept confidential. No identifying information was collected during the interviews. Signed written consent forms were also stored separately from the data so that names could not be linked to the data. To ensure the protection of study participants, all participants were fully informed about the study, advised on what would be involved in the study, and then were asked if they voluntarily agreed to participate in the study. Only the research team had access to the data.

4. Study Findings

This section presents the findings related to four main themes, including: 1) knowledge about maternal nutrition, 2) sources of information, 3) current behaviours related to maternal nutrition, and 4) hygiene. The last two sections highlight the conclusions and recommendations from the study.

Information About Maternal Nutrition

Source of Nutrition Information

This section presents findings on how women and their partners learnt about nutrition. The opportunity for pregnant women to learn about nutrition was mostly through the health centres. As such, ANC attendance was therefore of prime importance as it affected exposure to information on nutrition. All the women who took part in this study mentioned that they had made at least one visit to the health centre to access ANC services. The number of visits varied depending on the gestational age of the pregnancy. During these visits, women reported having learnt about nutrition at one point during their pregnancy. They reported that they received nutrition messages from the health centre when they went to access ANC services. Isolated cases of women also reported that they learnt about nutrition during pregnancy from their friends and family, including their mothers and sisters. Two women reported that they had learnt about nutrition through printed materials and television, in addition to the information they received from the health centre.

Some efforts are made to improve exposure to different health products and information at the health centres. For example, health workers reported that they encourage women to go for ANC early, to follow all the advice about health centre visits, and to take all the medications that are provided by the health centre.

Men commonly demonstrated to have scanty information about maternal nutrition during pregnancy. They mostly talked about maternal nutrition in general, rather than talking about specific details of maternal nutrition (i.e., the number of meals, types of food, composition of food that is necessary for a pregnant woman). The main source of information for male partners was their spouses who attend ANC.

“I have learnt [about nutrition] from my partner.” (22-year-old male partner with one child, of Lumwana, Solwezi)

The male partners also reported that they received information from the health centres—through posters and print materials at the health centre—and directly from health workers when they attended ANC clinics with their partners. Men reported that they are rarely exposed to information about nutrition. Some men expressly stated that the little knowledge they have about nutrition is what they learnt from school as part of the school curriculum and from books.

Type of Information Received

The women reported that they learnt many topics during the health discussions at the health centre. However, they did not provide any details about the topics learnt from other sources. The topics learnt from the health centre include eating nutritious foods during pregnancy, not carrying heavy loads, staying healthy, preparing for birth, recognising danger signs in pregnancy, and having enough rest. On diet, the women mentioned that they learnt that they should eat vegetables such as rape, cabbage, and katapa; protein foods such as beans, fish, kapenta, caterpillars, and groundnuts; fruits such as oranges, bananas, avocados, pineapples, and mangoes; grains such as maize and rice; and tubers such as cassava and sweet potatoes. They also learnt that they should eat a variety of food types so that the baby may develop properly and the woman will be able to achieve good health during pregnancy.

“They tell us to eat foods with vitamins (nutritious foods) such as oranges, bananas, beans.” (pregnant woman in Kimasala, Solwezi)

FGD participants in Chiyeke in Chavuma echoed similar views, and they reported that they also received information on the need to eat a variety of foods.

The women also reported that they obtained information about some food types and drinks that are not good for a pregnant woman. They cited drinks such as Coke (Coca-Cola) and reported that a pregnant woman should not take these and similar soft drinks because of high acidity, which they believed may lead to a miscarriage. This is one of the food myths that was very prevalent amongst women in all the locations included in this study.

Male partners reported that they have learnt that a pregnant woman is supposed to eat a mixed diet.

“It should be a balanced diet (mixed diet) with everything in it.” (male partner with three children in Chavuma)

A few men were able to list some important foods that a pregnant woman is supposed to eat. They listed fruits and vegetables as important foods during pregnancy.

“I have learnt from my wife; she told me oranges, cassava leaves, rape, and chibwabwa were good for her body and the unborn child; also on the value of oranges and eggplants. We were told these need to be eaten time and again.” (male partner in Mitukutuku, Solwezi)

However, most of the men were not explicit about the need for the pregnant woman to achieve a mixed diet or how a pregnant woman could achieve a mixed diet. In addition, male partners appeared to place greater emphasis on the importance of pregnant women eating vegetables than on other equally important food types, such as protein- and vitamin-rich foods. They also appeared to be unaware about dietary supplements, and therefore they hardly talked about the need for any dietary supplements in the diet of a pregnant woman.

Discussions with health workers provided insights about what women are taught during ANC visits. Health workers reported that they provide various services during ANC. They reported that the services have a strong emphasis on prevention of mother to child transmission of HIV, nutrition during pregnancy, danger signs during pregnancy, infant feeding, and family planning, amongst other topics.

“We focus on the (prevention of mother to child) transmission of HIV, nutrition during pregnancy, danger signs in pregnancy, postnatal care, infant feeding, family planning, etc.”

Specific to nutrition, health workers said:

“The pregnant women are taught on the kinds of foods they need to eat, which include the three types of foods and like the locally available and not necessarily buying from the shops.”

However, it is important to mention here that even some health workers were not sure about the number of meals that pregnant women are supposed to have, thereby increasing the likelihood of communicating mixed and inconsistent messages to pregnant and breastfeeding women in this regard.

Mode of Delivery of the Information

The women reported that information on nutrition and other health topics was shared with them through health education sessions held at the health centre during ANC visits and through one-on-one counselling/discussions in isolated cases. A few women also reported having received the information through drama performances. The women appreciated the use of visual aids such as posters/pictures and flip charts, but many of the women reported that the delivery of the information was only through verbal discussions with the health centre staff. They reported that they preferred visual materials

because they are not able to read when the material is in textual format. Many of the women reported that the information they received from the health centre was very helpful. In addition, they further recommended the use of visual aids to help them visualise and remember what they learnt. Some women further recommended the need to demonstrate what is being taught through cooking demonstrations. They reported that this would be better than just giving theoretical information.

“I’ll be seeing what they’re doing so I can easily learn.” (29-year-old pregnant woman in Solwezi)

Health workers reported that they use various methods to educate women on nutrition. A trained midwife reported:

“SMAGs educate women in the communities, and also we [health workers] educate them using IEC [information-education communication] materials.”

However, health workers appeared to agree with the outcry from women for the need for improved methods of teaching women about good nutrition and how to prepare food. They stated that they would prefer to conduct nutritional demonstrations, but they reported that cooking demonstrations were not commonly done.

“The best method of presentations/teaching is through cooking demonstrations.” (health worker)

“But since we just teach them verbally, it would have been a good opportunity to even do it practically.” (midwife)

In the few health centres where cooking demonstrations were conducted, health workers had devised methods of working around the inability of health centres to provide cooking implements and food by asking women to supply the food to be used in the cooking demonstrations.

“The nurses advise the women to buy (bring) foods, which they take with them at the health centre, and then they are taught on how to prepare it by demonstrating.” (health worker)

However, the nutritionists, who were the staff who conducted the cooking demonstrations, reported conducting cooking demonstrations sporadically. They added that they normally conducted the demonstrations when they received financial support from health communication partners, as the concept of relying on women to supply food and cooking implements was not very successful.

In addition to using cooking demonstrations, health workers recommended the use of drama performances as a good vehicle for communicating health messages at a community level. They argued that drama performances attract a lot of people, such that even pregnant women would attend.

It was commonly observed that male partners did not have as many opportunities for learning about nutrition and other health-related topics as their female counterparts. However, male partners expressed interest in learning more about nutrition.

“Yes, I wish to learn more on nutritious foods for pregnant women, just as they taught us the importance of eating oranges. I wish to learn how many times a pregnant woman should eat per day. I wish to learn more on issues of behaviours of a pregnant woman, and how to find solutions.” (35-year-old male partner of Chavuma with three children)

Male partners appeared to prefer learning about nutrition and other health-related topics from printed materials, and a few also reported that they would like to learn through community discussions.

Knowledge About Maternal Nutrition

Women were not specific about what constituted quality nutrition for a pregnant woman. However, many of them generally understood the connection between the diet of a pregnant woman and the health of the unborn child. Many pregnant women reported that they knew that they are supposed to eat a variety of foods in order to enable themselves and their unborn child to be healthy. They mentioned a variety of foods such as fruits, vegetables, eggs, groundnuts, fish, and avocados as foods that are good for a pregnant woman. However, what was not clarified from the interviews was whether the women were making any deliberate efforts to achieve the right combination of food, which they listed, to achieve a healthy mixed diet at each meal.

Similarly, some male partners demonstrated that they have basic understanding on nutrition. For example, a 35-year-old male partner in Chavuma listed a number of locally available foods that a pregnant woman should eat in order for her to achieve a good nutritional balance for herself and her unborn child:

“She should eat more vegetables, cereals, fruits, eggs, milk, fish, chibwabwa, kalembula, cassava leaves, and all vegetables.”

“A health meal for my partner would include things like matamba (cassava leaves) akubika twilo (combined with pounded groundnuts), eggs and chicken, fruits (oranges and mangoes), beans though it causes night blindness to her, vegetables, like she eats at least 1½ lamps of nshima with beans for lunch. Supper she can eat with vegetables, like matamba akusashila would be good.” (36-year-old male partner in Solwezi)

Men talked more about the number of meals that pregnant women should have, but they appeared to be unclear about the quality (food value) of food that was required. Male partners spoke in general terms and they were not able to specify what food mixtures would enable a woman to achieve minimum daily nutritional requirements for a pregnant woman. During the interviews, men commonly emphasized the number of meals that a woman should have and they did not seem to pay attention to the types of food.

“She eats all meals: breakfast, lunch, and supper.” (20-year-old male partner in Solwezi)

Understanding of the Importance of Healthy Diet for a Pregnant Woman

Many of the women showed understanding about the importance of a healthy diet for a pregnant woman. Nonetheless, the women were not able to clearly define what constitutes a good diet; many of them expressed a lot of understanding about the link between their diet and its impact on their health and that of the unborn child.

“If I do not eat healthy foods, maybe I will have an underweight baby.” (22-year-old pregnant woman of Solwezi)

“I eat foods that I know will help me and the baby be strong and healthy.” (25-year-old pregnant woman and mother of three)

Male partners expressed clarity about the need for a healthy diet for a pregnant woman. All of them were able to make a link between what the woman ate and her health and the health of the unborn baby. For example, a 36-year-old male partner with six children talked about the importance of a healthy diet for a pregnant woman and said:

“To increase blood for her and the baby, to make her healthy and strong so that she does not feel weak [this way], the baby will be healthy, stable, and grow well.”

Importance of Gaining Weight During Pregnancy

The women also understood that their weight is associated with the development of their child. They reported that their weight, and generally the weight of a pregnant woman, increases because they were carrying a child and, to them, weight gain signified that the baby was fit and healthy, and it generally showed that things were progressing well.

Nutrition Behaviours

Nutrition practices are very important during pregnancy, as they affect pregnancy outcomes. Nutrition practices were assessed by asking the women what they ate within a 24-hour period (24-hour dietary recall), the usual number of meals they ate per day, types of food they ate, and any reported changes they made in their diet aimed at achieving balanced (mixed) meals, such as number of meals, the quantities of food per serving, the variety in the food they ate, and the appropriateness of how they prepared the food they ate.

Normally, pregnant women reported that they ate three meals per day. Pregnant women gave the impression that they did not include any snacks in their diet. The women commonly reported having a morning meal, afternoon meal, and evening meal. The morning meals were composed of rice (although not common), munkoyo/maheu, porridge, bread (although not common), groundnuts, and sweet potatoes, amongst others. For lunch, pregnant women reported that they mostly ate nshima (made from maize meal and cassava meal) along with different types of accompaniments, mostly vegetables, beans, and kapenta, including fish, amongst others. According to health workers, the reported nutrition behaviours were contrary to what the women are commonly advised on the number of meals they should have.

“I think they are supposed to have even five to six meals per day. Where they can have the normal they can have breakfast, maybe after that they can have lunch, then in between lunch and supper they can have also something and then supper.”
(registered nurse in Chavuma)

Normally, pregnant women reported that their diets had changed since they became pregnant. They reported that they ate at least three meals per day depending on the availability of foods. Most pregnant women stated that appetite to eat progressed in three phases: in early pregnancy, their appetite is not good; later, it improved, but as the pregnancy advanced to term, their quantity of food per serving was reduced.

“This time I’m eating just a little, especially nshima, because just a little food makes me very full.”(23-year-old pregnant mother of three in Lumwana, Solwezi)

Many women reported that during early pregnancy, they mostly ate snacks due to the instability of the pregnancy. As the pregnancy progressed, they reported that they ate larger quantities as compared to when the pregnancy was in the early stages. Many of the women reported that as the pregnancy progressed, they reduced the quantity of food per serving.

“I eat three times a day but in fewer quantities as compared to before I was pregnant.” (36-year old pregnant woman and mother of four in Chavuma)

“This time I am eating just a little, because very little food makes me feel very full.”
(19-year-old woman in Chavuma)

Women reported that they did not change the number of meals eaten per day; the primary changes were in the quantity of the food they ate per meal.

“I still eat three times a day. The only difference is that I was eating nshima even in the morning, but now I can’t eat nshima. I only drink milk and mahewu. I can only

eat nshima in the afternoon and evenings.” (29-year-old pregnant woman from Solwezi)

Discussions of nutrition practices also elicited that pregnant women do crave some foods. Most commonly identified cravings included eating soils to give them appetite to eat other foods. They also stated that the desire to eat certain foods (craving) is influenced by the unborn baby, who dictates what they eat, and they reported that they have to follow it. Others reported cravings for avocados, lumanda, matamba, and sweet potato leaves. Others reported cravings for very cold or icy water, zigolo (sugar solution), tea, maheu, and bans. Most respondents stated that they reduced preparing and eating food with too much salt:

“I avoid eating too much salt. The one I stay with suffers from BP (high blood pressure) and does not like too much salt.” (33-year-old pregnant woman in Chiyeke, Chavuma)

Pregnant women also reported that some of the changes to their diet were influenced by the availability and affordability of foods.

“I am not eating well because food is not seen (not available or affordable). Sometimes in the morning there is nothing, and even in the afternoon, so I stay without eating. If it’s in the evening when food is found, then I will eat once.” (22-year-old pregnant woman in Lumwana, Solwezi)

Male partners were also asked to report on the changes that they observed their pregnant partners making. They commonly reported noticing a reduction in the food eaten by women when they were pregnant as compared to when they were not pregnant.

“She [my partner] eats very little and not enough. She has reduced [the quantity of food she eats] since she got pregnant.” (20-year-old man of Kalombo, Chavuma)

Preparation of Food

In terms of the preparation of food, many of the women reported that they mostly boil their food. Few women reported that they fry their food, and only one woman reported that she normally eats roasted food. Some women believe that frying food reduces the nutrient content in the food and, as such, many of the pregnant women reported that their preferred method of preparing their food was boiling. Some women reported that they preferred boiled food because fried food made them nauseated.

“Fried fish has no vitamins, but when I cook there are vitamins.” (29-year-old pregnant woman in Solwezi)

The interviews with women on food preparation gave the impression that women needed information and skills on how to correctly prepare food. A health worker in Solwezi noted that despite the availability of food, including vegetables, women did not generally prepare them correctly to allow the food to retain its nutrients.

“We should not take it for granted that women know how to prepare the foods they have.” “They [women] may have vegetables, but they usually overcook them. They can buy fish, but they usually put bicarbonate of soda in it, so the nutrients are destroyed.” (health worker in Chavuma)

Therefore, although the women reported that they ate a variety of vegetables, the vitamins in the food usually got destroyed due to overcooking, especially in situations when the vegetables were mixed with groundnuts, which require that the food be cooked for a long time to allow the groundnuts to adequately cook. Therefore, while adding groundnuts enriches the protein content, overcooking destroys the vitamins/nutrients in the vegetables.

Varieties of Food Eaten

In terms of types of food, many women reported that they eat mostly nshima with vegetables such as rape, cassava leaves, and pumpkin leaves (chibwabwa), and a few mentioned eating some protein foods such as fish, kapenta, and groundnuts. Even fewer reported that they eat fruits such as oranges, mangoes, apples, bananas, and pineapples.

Table 3 provides a summary of the 24-hour dietary recall for 13 pregnant women who participated in IDIs. The table shows the number of meals and whether the meal had mixed foods, including the three basic food types: carbohydrates, proteins, and vitamins.

Table 3: 24-Hour Dietary Recall for Pregnant Women

Respondent	# of Meals	Food Types per Meal				
		Morning Meals	Mid-morning	Lunch	Mid-afternoon	Supper/Dinner
1	4	<ul style="list-style-type: none"> Protein (milk) 		<ul style="list-style-type: none"> Carbohydrate (nshima) Protein (kapenta, groundnuts) Vegetable (tomatoes) 	Carbohydrate (munkoyo)	<ul style="list-style-type: none"> Carbohydrate (nshima) Vegetable (pumpkin leaves, onion) Protein (fish, groundnuts)
2	3	<ul style="list-style-type: none"> Carbohydrate (nshima) Vegetable (rape, tomatoes) 		<ul style="list-style-type: none"> Carbohydrate (nshima) Protein (beans) Vegetable (rape, tomatoes) 		<ul style="list-style-type: none"> Carbohydrate (Nshima) Vegetable (rape, tomatoes)
3	3^	<ul style="list-style-type: none"> Carbohydrate (cassava, porridge) 		<ul style="list-style-type: none"> Carbohydrate (nshima) Protein (beans) Vegetables 		<ul style="list-style-type: none"> Carbohydrate (nshima) Vegetables
4	3^	<ul style="list-style-type: none"> Carbohydrate (nshima) Vegetables (tomatoes) 		<ul style="list-style-type: none"> Carbohydrate (nshima) Protein (kapenta, groundnuts) Vegetable (tomatoes in kepenta) 		<ul style="list-style-type: none"> Carbohydrate (Nshima) Vegetable (pumpkin leaves, tomatoes) Protein (fish)
5	3	<ul style="list-style-type: none"> Carbohydrate (rice) Protein (milk) 		<ul style="list-style-type: none"> Carbohydrate (bread) 		<ul style="list-style-type: none"> Carbohydrate (nshima) Protein (fish) Vegetable (tomatoes*)
6	3^	<ul style="list-style-type: none"> Carbohydrate (rice) Protein (milk) 		<ul style="list-style-type: none"> Carbohydrate (nshima) Protein (groundnuts*) Vegetables (katapa, tomatoes*, onion*) 		<ul style="list-style-type: none"> Carbohydrate (scones)
7	3^	<ul style="list-style-type: none"> Carbohydrate (rice) Protein (groundnuts*) 		<ul style="list-style-type: none"> Carbohydrate (nshima) Protein (fish) 		<ul style="list-style-type: none"> Carbohydrate (nshima) Protein (fish)
8	3^	<ul style="list-style-type: none"> Carbohydrate (rice) 		<ul style="list-style-type: none"> Carbohydrate (nshima) Vegetable (cassava leaves) 		<ul style="list-style-type: none"> Carbohydrate (rice) Protein (groundnuts in rice*)
9	3^	<ul style="list-style-type: none"> Carbohydrate (rice) Protein (milk) 		<ul style="list-style-type: none"> Carbohydrate (bread) 		<ul style="list-style-type: none"> Carbohydrate (nshima) Protein (fish) Vegetable (tomatoes*)
10	3^	<ul style="list-style-type: none"> Carbohydrate (scones, soft drink) 		<ul style="list-style-type: none"> Carbohydrate (nshima) Protein (groundnuts in katapa, beef) Vegetable (tomatoes*) 		<ul style="list-style-type: none"> Carbohydrate (nshima) Protein (fish) Vegetables (tomatoes*)

11	3^	<ul style="list-style-type: none"> • Carbohydrate (rice) • Protein (milk) 		<ul style="list-style-type: none"> • Carbohydrate (nshima) • Protein (groundnuts in katapa*) • Vegetables (tomatoes, onion*) 		<ul style="list-style-type: none"> • Carbohydrate (scones) • Protein (milk)
12	3	<ul style="list-style-type: none"> • Carbohydrate (sump) 		<ul style="list-style-type: none"> • Carbohydrate (nshima) • Vegetable (rape) 		<ul style="list-style-type: none"> • Carbohydrate (nshima) • Vegetables (cabbage)
13	3	<ul style="list-style-type: none"> • Carbohydrate (scones) 		<ul style="list-style-type: none"> • Carbohydrate (rice) 		<ul style="list-style-type: none"> • Carbohydrate (nshima) • Protein (fish) • Vegetable (tomatoes*)

*Food item was an ingredient in another dish.

^ Respondent mentioned that she ate or sometimes eats snacks, but snacks were not reported in the 24-hour dietary recall.

The dietary recall showed that pregnant women normally have three meals daily: the morning meal, lunch, and supper. From the number of meals women reported to have, results suggest that women did not include any snacks in their 24-hours diet. In terms of the dominant food type, the 24-hour dietary information showed that the diet of pregnant women was predominantly carbohydrates. The meals were rarely composed of all three food types (protein, vitamins, and carbohydrates). Nshima made of cassava and/or maize meal forms the main carbohydrate component, and vegetables, including tomatoes, formed the vitamin-source food being referenced in the report. Protein-source foods included fish and meat, although most of the protein was sourced from porridge, rice, and vegetables enriched with groundnut powder. The morning meal eaten by many pregnant women is almost exclusively made of carbohydrates, and it was their least balanced meal of the day. The midday and evening meals were relatively balanced, as they were usually composed of at least two food types: carbohydrates and vegetables or protein-source foods. It is important to note here that although the dietary recall shows that women ate vitamin-source foods, it is highly doubtful that the vegetables they ate (including tomatoes) even had any vitamins by the time it was served. The vegetables were mostly overcooked, leaving only the roughage and perhaps the protein from the groundnut powder.

Limitation of the 24-Hour Dietary Recall Information

It is important to mention here that the dietary recall information may have some limitations. This is because data collectors appeared to have emphasised the reporting of what may be termed “major meals”—the morning, midday, and the evening meals—and not any meals that were eaten in between these meals. As such, in some interviews, respondents mentioned having eaten a snack, but this information was not adequately probed to be properly recorded in the 24-hour dietary recall. Some of the snacks that pregnant women reported to have eaten included oranges, bananas, apples, cassava, sweet potatoes, fritters, mangoes, and some other fruits. However, many of the women reported that they rarely included any snacks in their diet.

Micronutrient Supplementation

All the women reported that they took the micronutrient supplements provided by the health centres. The supplements include iron and folic acid, which the women commonly referred to as vitamin pills. The women reported that the pills were for blood, appetite, and vitamins. For example, a 29-year-old pregnant woman who was also a mother of four reported:

“My eating has changed because of the medicine. I eat a lot, and we are given drugs for blood and strength. I eat breakfast, lunch, and supper; three meals daily.”

Changes in Diet

Many of the women reported that they made some changes to their diet during pregnancy. The major changes that pregnant women made to their diet included the reduction in the quantity of food per serving and the way they prepared the food. They further reported that they mostly boiled their food and reduced sugar and salt intake because of the pregnancy—they made these changes to their diet based on cravings and, as for sugar and salty foods, to reduce the chances of developing hypertension during pregnancy. For example, in the FGDs, a 24-year-old woman who was six months pregnant in Chiyeke, Chavuma reported:

“Eating depends on what the baby wants. If the baby does not want any food, one can stay without food while others eat.”

From the interviews with pregnant women, there were hardly any expressed views that suggested that the women made any deliberate effort to eat specific foods to achieve weight gain and/or eat a mixed diet. What was prominent in the interviews was that pregnant women adjusted what they ate to satisfy cravings. For example, a 27-year-old pregnant woman and mother of four in Chavuma reported:

“The changes in my diet have been dictated to me by the baby I am carrying.”

For some women, the changes they made were specifically to achieve some variety in the diet.

“I don’t like eating the same things, so if I eat vegetables in the afternoon, then in the evening I should eat something else—things like fresh fish that is cooked, not fried.”
(29-year-old pregnant woman and mother of three in Solwezi).

Hygiene Behaviours

Water Treatment

Participants reported that they drew their water from shallow wells; a few women reported that they drew water from boreholes, and only two women reported that their water source was a tap. Despite drawing water from unsafe sources, such as shallow wells, the pregnant women held a perception that the water was of high quality or safe. The pregnant women reported that they drank the water straight from the source, and without treating it in any way. Only a few of them reported that they chlorinated their water before drinking. The overriding factor for not treating the water was that everyone in the community believed that the water was safe.

“All of us drink [without treating the water] because it is safe...The shallow well is always cleaned before fetching water for use at home.” (22-year-old pregnant woman in Lumwana, Solwezi).

The few women who reported treating their water reported that their primary method of treating water was boiling; and they also reported that they occasionally treated their water with chlorine when it was available in the household.

Handwashing

Many pregnant women reported that they did not wash their hands when handling food. They generally washed their hands before eating, after handling dirt and after handling smelly items, and after using the toilet. When women washed their hands at critical times, such as after using the toilet, many of them reported that they simply washed their hands without soap.

“I just wash with plain water because my hands are not very dirty.” (29-year-old pregnant woman in Chavuma, Chingi)

The major reason for not using soap was that they rarely had soap available in the household. When soap was available, the women reported that they washed their hands with soap only after using the toilet, or to wash off the smell after eating smelly foods such as fish, but not before eating.

“[I] only [wash my hands with soap] when you [I] eat [nshima] with fish and after using the toilet.” (23-year-old pregnant woman in Lumwana, Solwezi)

“I only wash my hands with soap after eating—to remove the scent of the relish, especially if it’s fish.” (25-year-old pregnant woman in Kimasala, Solwezi)

A group of pregnant women who participated in one of the FGDs further emphasised that washing hands with soap before eating was not a common practice in the villages.

“I don’t wash with soap before eating—I have not thought of that [washing hands with soap before eating].” (19-year-old pregnant woman in Chivombo, Chavuma).

Nutrition Decision-Making

Almost all the women reported that they were the ones responsible for deciding what to eat for the day. Many of them reported that the money they use to buy the food was given to them by their male partners, and a few women also mentioned that they supplement their main income by engaging in some small-scale businesses, such as selling vegetables. Other women depended on selling farm produce to earn the money they use to buy household requirements. All the female and male respondents reported that the power to decide on what is actually bought and eaten for the day generally rested with the women.

“When I am given the money, I decide what to buy.”(22-year-old pregnant woman in Solwezi)

Many of the women who were interviewed did not clearly explain what motivated their purchasing decisions about the food they bought and ate for the day. Very few women specified that they systematically chose the type of food they bought so as to achieve good health for the baby and themselves. For example, a 20-year-old woman in Solwezi reported:

“I don’t just go and buy [food], but I know what type of food I must eat as a pregnant woman.”

Some women mentioned that their nutrition decisions are made to satisfy cravings; they are not specifically motivated by any desire to meet nutrition requirements.

“It is the heart and the baby that control me to decide what to eat. If at the time the heart tells you this or that, you follow that.” (29-year-old pregnant woman and mother of three in Solwezi)

Facilitating Factors

Study participants highlighted that the ability to buy food (money), nutrition information provided by health workers, and availability of seasonal foods were some of the key facilitating factors of achieving improved nutrition during pregnancy and during the breastfeeding period amongst women.

“It’s just money. If I have the money I can buy anything I want. To buy things like oranges and bananas, one needs money, so without money you can’t afford anything. For nshima and other vegetables, I can cultivate.” (22-year-old pregnant woman in Solwezi)

“Mostly here in our local community, pregnant women mostly eat nshima made of cassava meal and also maize, and the locally available foods like katapa (cassava leaves), rape, and so on. Those are the types of food that are common here. Those who are financially well are also able to get even meat, fish, and other good foods. Those who have husband who are hunters, they are able to go in the bush; they hunt and bring for their families.” (health worker)

“We [the health workers] are a contributing factor because we are the people who are empowered with the knowledge, and we give it to the people who are coming to seek for it.” (health worker)

In addition, a 27-year-old pregnant woman reported that they make sure they have food available by being strong in farming. The women also stated that the availability of certain seasonal local fruits and foods like oranges, mandarins, and mangoes makes it easier for them to achieve better nutrition when they are in season.

Support

Many of the women reported that they receive monetary support to buy the food required for the household. It was not clear if the support given was any different compared to the time before pregnancy. In very few cases, the support was provided in the form of food supplies, and many women said they normally received information from the health centre. They claimed that information from health workers on good nutrition, including eating foods with vitamins, facilitates the attainment of good nutrition. Male partners normally provided monetary support to buy the required food.

“I receive money from my husband. The clinic staff teach us good nutrition, but from the community, no [I don’t receive any help from the community].” (25-year-old pregnant woman in Kimasala, Solwezi)

Pregnant women reported receiving support from members of their family. Some women reported that they were encouraged to regularly attend ANC by members of their family, and this helped them to eventually find themselves being exposed to health messages, including nutrition messages.

“My sister reminds me to come for antenatal [as advised by health workers].” (20-year-old pregnant woman in Mitukutuku, Solwezi)

Barriers to Good Nutrition Behaviours

Although many of the women who participated in IDIs mentioned a number of nutritious foods that they believe they should eat, as pregnant women, so that they and their baby will be healthy, many of them reported that they are not able to do so because of some inhibiting factors. Results revealed the major barriers to be lack of financial resources, food myths, late attendance to antenatal clinics, low knowledge levels about nutrition and learning opportunities for nutrition, few nutrition experts available to man all the health centres, and work overload amongst health workers.

Lack of Financial Resources

Pregnant women reported that the major barrier for not being able to buy the food they desired, and particularly their inability to buy snacks, was because they did not have the money to buy snacks. This, they reported, was the major reason why they ended up eating whatever was available for them and their families.

“In this village money is difficult to find. So they [health workers] may recommend saying you should be eating mangoes, oranges, bananas, and other things. One may follow some of the advice but not all.” (22-year-old woman who was six months pregnant)

Food Myths

Food myths were amongst some of the barriers to eating some of the nutritious foods required by pregnant women. Food myths were reported not to be very common, and women commonly reported that they themselves did not practice them but that they knew people in their community who practiced these myths. Food myths were around eating foods such as eggs, okra, and food prepared with bicarbonate of soda, and eating certain meat products such as pork and goat, amongst others. Some pregnant women reported that eating eggs would cause one’s child to be born with a bald head; eating okra would cause the baby to be born a weakling and cause difficult and prolonged labour; and that eating chili affected the eyesight of the unborn child.

“If I eat foods like okra and lumanda, I will be shivering (weak) when giving birth and I won’t have the energy to give birth.” (FGD, six to nine months pregnant women, aged 18–35 years, with zero to eight children, in Mitukutuku, Solwezi)

They believed that eating meat from animals such as pigs and goats would have behavioural effects on the child, causing the child to start to behave like a pig or a goat when it is born. FGD participants also mentioned that eating chili and related spices would cause the baby to be born with sore lips (red lips); that bicarbonate of soda has no vitamins, causes cancer, and causes the child to be born with measles; that leftover food causes difficulties giving birth during labour; and that eating animals that died on their own or died with a foetus will cause maternal and/or foetal death. Some pregnant women also stated that they avoid eating “too much” food to avoid giving birth to a big baby. Delivering a large baby, they believed, will lead to a difficult childbirth or failure to have a normal delivery. They also avoid eating eggplant because of the beliefs that the baby will be born with six fingers or will develop some other disability. They reported taking herbs and okra in late pregnancy to help ensure a smooth delivery, as quoted:

“We start taking herbs at the late stage of pregnancy and also start eating okra to prepare the passage for the baby in order to deliver well.” (FGD, six to eight months pregnant women, aged 18–40 years, with one to nine children in Chingi, Chavuma)

Poor Coverage of Nutrition Activities

The eight health workers who were interviewed in this study commonly cited lack of teaching aids, limited opportunities for learning about nutrition, and low levels of nutritionists in health centres as the key barriers to accessing information on nutrition amongst pregnant women. In addition, health workers complained about having poor coverage of nutrition activities, which they said are limited to a few locations, usually health centres in the district, and low male involvement as some of the inhibiting factors for women in attaining desired levels of knowledge and nutrition.

Furthermore, health workers lamented the late ANC attendance by women as one of the reasons why some of them do not have an opportunity to be exposed to information on nutrition. For example, a registered nurse reported that most of the women in his catchment area usually start ANC late because they believe that early attendance will expose them to witchcraft, which may lead to an unsuccessful pregnancy.

“Traditionally, when you look at here in the villages, they say that if you go to register early, when the pregnant is not yet grown up, others say that the pregnant might come out.” (health worker)

“On that one, at times it is even the level of education people have reached and how the information about antenatal has been disseminated that is where the difference is, but others have been attending antenatal for several years, but still cannot change; they can only go at the time when they are at six months. Recently, a woman registered on a Tuesday, like last week, and she delivered this Tuesday [only one week after registering].” (health worker in Chavuma)

As a result of the observed limited coverage of programming on nutrition, health workers recommended increasing opportunities for learning:

“If we can have even issues of media, say you provide a video and translate it into the local language or some time they can be somebody interpreting. Also pictures [posters, flip charts, etc.], if they are brought and then we can use them, I am sure availability of various teaching aids/materials will make it easy for women to learn.” (health worker)

Health workers reported that not every health worker is an expert on nutrition. The health workers recommended inviting trained nutritionists to deliver information on nutrition to the pregnant women and other target audiences. They also expressed the need for those who are trained to spread out to the entire district and not focus on only certain parts of the district. In addition to the training, health worker complained that the low staffing levels at the health centre also affect the amount of time that health workers allocate to education sessions at the health centre. They reported that the efforts of the few staff members are usually thinly spread to cover a wide clientele.

“I think on good nutrition the people who are trained in nutrition should start doing the work. We have some in the district who have never visited the centre.” (health worker)

“We have been pleading with the provincial administration to be telling these people [the trained nutritionists] that they have to visit all health centres and that they were not trained nutritionist for Chiyeke health centres.” (health centre participant in Chavuma)

“The issues of staffing also because we don’t have trained midwives at our facility, so you find that we are forced to do things which are supposed to be done by the midwives. But if we had trained midwives, it will be easier for us to sit and provide these services [nutrition counselling] nicely to the pregnant women.” (health worker)

Health workers also noted that when pregnant women attend ANC with their male partners, it is easier to communicate and the women are more likely to adopt the teachings. However, health workers commonly reported that very few men accompanied their partners to the health centres, which they said cause a lot of problems in terms of communication and consumption of messages.

“Women say they are taught to eat certain kinds of foods at the clinic, and the husband may refuse. Some male partners that come at the clinic during booking usually complain that nurses tell their wives to be eating meat mostly, and this creates problems and quarrels in the home.”

The low involvement of males also made it difficult to increase knowledge levels amongst men.

“Because not all of them (pregnant women) come with men [to the health centre], so even when we tell the wives to inform their husbands anything they [men] don’t understand.” (health worker)

The lack of communication amongst partners (men and women) was one of the commonly cited factors in the low levels of information amongst men. Some men actually complained that women do not share what they are taught at the health centre, and this further deprives the men of much-needed information about nutrition.

“I don’t know if she receives right information; she has not told me anything.” (male partner in Lumwana, Solwezi)

Health workers also reported environmental factors that may inhibit the growing of food crops in certain areas as one of the inhibiting factors in the achievement of good nutrition amongst women. For example, health workers recommended that some people live in areas where they cannot grow any crops, so there is a need to find other ways of helping the people to achieve better nutrition.

“For those who live in the west bank, they are unable to grow any food. Another problem is that seasonality of certain foods.”

Knowledge of BCC Efforts

Almost all the women in this study reported that they learnt about nutrition from the health centres through health workers. The teachings normally involved discussions during ANC visits, and only one woman mentioned having participated in a cooking demonstration activity:

“Sometimes they teach on how to cook vegetables.” (32-year-old pregnant woman in Chavuma)

In terms of coverage of BCC interventions, many of the women reported that they were not aware of any BCC activities happening in their communities. The majority of the women were emphatic about the absence of any BCC interventions in their communities. Only two women of the 13 IDI participants mentioned the presence of SMAGs conducting nutrition interventions in their community. The pregnant women actually mentioned that the SMAG activities take place at a church. The women further reported that the SMAGs engaged the community through discussions on nutrition. Health workers generally reported that they do not conduct community BCC interventions at the community level.

“The SMAGs gather the pregnant women at some church, and we are taught how to live a healthy life through discussions.” (24-year-old pregnant woman in Chavuma district in Chivombo)

“We only have nutritional discussions [here at the clinic]; we give them pamphlets when we have. However, there is no community activism that I know of [in our community].” (health worker)

Given the low coverage for BCC interventions focusing on nutrition and also the limited methods of teaching used, pregnant women recommended that they would like to learn about nutrition through discussions, drama, and one-on-one discussions within their communities. They further recommended the need to couple nutrition discussions with cooking demonstrations and not only verbal discussions.

“When we go to the clinic there should be cooking demonstrations to make sure all the women know how to prepare good, nutritious foods” (FGD, six to seven months pregnant women, aged 19–32, with zero to six children, in Chiyeke, Chavuma).

Health workers confirmed the presence of BCC efforts that focus on many issues pertaining to pregnant women, including nutrition. Almost all health workers further confirmed that the vast majority of the interventions are not provided in isolation, but are integrated with other information on maternal health during pregnancy, and that the interventions are normally done at the health centre. However, health workers complained that it has been very difficult to convince women to accept any changes in their nutrition behaviours due to the low education levels amongst women.

5. Conclusions

- The findings suggest that pregnant women know the link between what they eat and their own health and that of their unborn baby. It is not clear from the findings whether this awareness translates into deliberate efforts to follow any specific diet to achieve improved nutrition. The pregnant women's diets seem to be influenced by both cravings for foods and lack of access to healthy foods. The women were also not specific regarding what they understood to be a good diet during pregnancy; they only indicated what types of foods they believe they should be eating, but not how often (frequency) or how much (quantity). The women highlighted a number of locally available nutritious foods that they said were good for them as pregnant women.
- The findings suggest that pregnant women do not increase their number of meals per day. At the time of the interview, they typically ate three meals daily, with no snacks. The quantities of food servings per meal were also reported to be reduced at the early and late phases of their pregnancies, compared to dietary intake prior to pregnancy.
- Inhibiting factors to positively influence the nutrition behaviours of pregnant women included:
 - The lack of money to buy and eat what pregnant women wanted to eat, and the limited seasonal availability of certain foods;
 - Some weaknesses, cited by health workers, in the implementation of nutrition communication activities, such as a lack of available communication materials, a limited number of health workers trained in nutrition, and overall low coverage of nutrition communication activities;
 - Myths and misconceptions about some foods that if prepared could contribute to good nutrition of both the mother and the unborn baby, like not eating eggs or eggplants and other vegetables during pregnancy; and
 - Poor or late ANC attendance by men and women, cited by health workers.
- The main facilitating factors were availability of food in the household, ability to buy food, and the capacity to make daily nutrition decisions by the women when money was available for them to do so.
- On hygiene, the source of water for most of the women was shallow wells. Many of the women perceived that their water was safe to drink; thus, the majority did not treat the water. Many women washed their hands when preparing food and during critical times, such as after using the toilet. They normally did not wash their hands with soap or ash before eating their food, but they sometimes used soap, when it was available, to wash their hands after using the toilet and after eating smelly foods. This showed that most pregnant women had low risk perception about unsafe water supply and poor hygienic standards.
- BCC activities on good and mixed nutrition in the community for pregnant women are scanty or even absent. Some BCC activities take place at health facilities conducted by health workers, who in most cases are not adequately trained in nutrition for pregnant women and children.

6. Recommendations

Based on the findings, this study recommends the following:

- Nutrition intervention efforts should focus on improving specific and detailed knowledge regarding the foods, frequency, and minimum daily requirements (amounts) that pregnant women should eat for their health and that of the baby. It was common to hear pregnant women mention a lot of nutritious foods that, if properly mixed, could help women achieve good nutrition. Intervention efforts should be designed such that they provide enough detail regarding how a mixed diet could be achieved through mixing locally available and cheap foods at every meal.
- It will be important to implement interventions to help pregnant women achieve daily nutritional requirements, by providing feeding tactics so they can overcome any difficulties that may inhibit the consumption of the daily required frequency, amounts, and types of food. Pregnant women may be provided with ideas to deal with difficulties in appetite during early and late pregnancy. Women and households may be empowered with skills to store foods for consumption during seasons when food is scarce or out of season, and households may be encouraged to grow vegetables that are suited to their locations to help them become food secure (food security).
- Interventions to increase risk awareness about the water that people drink will be important. These interventions should encourage communities to treat the water (through chlorination or boiling) to avoid drinking contaminated water. Furthermore, efforts should also focus on increasing risk awareness of hand washing without soap after using the toilet, before preparing food, and before eating food.
- Overall community BCC activities should be strengthened and should focus on taking pregnant women through the entire process of behaviour change so they can easily adopt healthy behaviours by using different teachings and other practical approaches, such as cooking demonstrations, food fairs, use of visual aids and standard teaching materials, and training of all health workers who are involved in the dissemination of nutrition information.
- Interventions should train households on how to preserve foods (food preservation) so that food is available throughout the various seasons. These interventions should ensure that the methods of preservation help to retain the nutritional value of the foods.
- Efforts should be strengthened to ensure male involvement in all matters pertaining to safe motherhood and nutrition. Strategies may involve working with community-level structures, such as chiefs and headmen, who may be tasked to oversee and ensure that male involvement in maternal and child health is improved.
- All health workers who are involved in the dissemination of nutrition information should receive training.
- Strategies should be developed for working with community-level structures, such as chiefs and headmen, tasked to oversee and ensure that males are involved in maternal and child health issues, including provision of adequate nutrition to their pregnant partners.
- Design radio and TV programmes on good nutrition.

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Appendices

Appendix 1: Deliverables and Timeline

	Activity	July	August	Sept,	Oct	Nov
1	Write research proposal	XX				
2	Get ethical clearance		XX			
3	Get authority from the Permanent Secretary, Ministry of Health to conduct the research			XX		
4	Recruitment of research assistants			XX		
5	Training research assistants and pre-testing research tools			XX		
6	Conducting the research			XX		
7	Analysis of data				XX	
8	Presentation of draft report					XX
9	Presentation of the final research					XX
10	Development of BCC strategy					XX

Appendix 2: Interview Guide for Pregnant Women

Formative Research on Knowledge, Attitudes and Practices of Maternal Nutrition during Pregnancy In Solwezi And Chavuma Districts Interview Guide for Pregnant Women

1. Introduction: Now that we have reviewed the information about the study based on the information sheet, we will now proceed to conduct the interview. However, before we begin, I'd like to review some rules or guidelines for today's discussion. These rules are our guidelines for operating so that we can complete our task in a manner that is respectful and provides you with the opportunity to express your thoughts safely and confidentially.

- You have been invited here to offer your experiences, views and opinions.
- Again, there are no right or wrong answers.
- It's okay to be critical. I want to hear your views and opinions about whether you like or dislike something you see or hear.
- This session will be audio taped. This allows us to capture everything that is being said today, and we will include the information in a report.
- There will be observers.
- All of your answers will be confidential, so feel free to say exactly what is on your mind. Nothing will be attributed to any particular person in our report.
- You may excuse yourself from the conversation at any time for any reason.
- Lastly, please turn off the ringers on your cell phone.

Do you have any questions at this time?

Yes: _____ No: _____ [If Yes, answer the question if possible.]

Is it okay for us to proceed with the interview?

Yes: _____ No: _____ [If No, terminate and thank respondent for their time]

2. DEMOGRAPHIC INFORMATION

- i. Date: _____
- ii. Interview start time: _____
- iii. Community: _____
- iv. Interviewer: _____
- v. Age of Woman: _____ Birthdate (if known): _____
- vi. How many children does she have: _____
- vii. Occupation (if any): _____
- viii. How many months along is the woman in her pregnancy? _____
- ix. Marital status: _____
- x. Level of education: _____

3. OVERALL HEALTH OF WOMAN AND ANC ATTENDANCE

1. How is your health, in general?
2. Have you been for antenatal care?
 - i. If no, why not?
 - ii. If yes, what advice did you receive there about your pregnancy?
3. What type of information on nutrition have you been given during your antenatal visits?
 - i. How helpful was the information?
 - ii. How did you apply the information to your diet?

4. KNOWLEDGE ABOUT MATERNAL NUTRITION AND IMPACT ON CHILD AND MOTHER

- i. *Have you ever attended a session where you learnt anything about what to eat during your pregnancy? What?*
 - ii. What food/kind of diet do you think you should eat to be healthy as a pregnant woman?
 - iii. Are you supposed to eat differently at different stages (in months) of your pregnancy? *if yes, in what ways?*
2. How your eating is related to your health and that of your unborn child?

5. DETAILS ON DIET

1. Tell me a bit about what you eat daily?
 - i. What do you eat when you wake up?
 - ii. At mid-day?
 - iii. In the evening?
 - iv. Do you eat any snacks?
2. Do you eat any differently because you are pregnant?
 - i. What do you do differently? Why?
 - ii. What differences if any have you made to your eating in terms of quantity of food, type of food and frequency (number of times) of meals as compared to the time before you became pregnant? Why did you make those changes?

3. What foods, if any, do you think you should not eat as a woman who is pregnant? What will happen if you do not follow that?
4. What, if any, difference is there between the foods you buy/feed eat and what the rest of your household eats? What are your reasons for that?
5. Have you changed any of the ways that you prepare food since you have been pregnant? For example what about fried foods? What about foods with salt or sugar?
6. How is your daily consumption of the following foods in terms of frequency, quantity now that you are pregnant?

(a) Proteins and other Animal source foods

(b) Vegetables (i.e. bondwe, katapa, etc)

(c) Fruits (ie.pineapples, mangoes, Mpundu, Masuku etc)

(d) Carbohydrates (ie. Nshima, rice, cassava, millet, etc)

7. How do you incorporate wild or locally grown foods into your diet?

6. SUPPLEMENTATION

1. What special foods/ preparations/ products, if any, are you taking as diet supplements while you are pregnant?

If not mentioned, probe:

- a. Are you taking any vitamin pills (i.e. iron-folate pills, etc)
- b. Are you drinking any traditional herbs? Why?
- c. Soils? Why?

2. Do you know how much weight you have gained during your pregnancy?
 - i. What effect does your weight have on your health and that of your child?

7. NUTRITION DECISION MAKING:

1. Who usually provide the food that you eat in your household?
2. Are you responsible for buying food in your household?
 - i. *If not, who is?*
 - ii. *If not responsible, what role do you play in the decision as to what kinds of food to buy/eat for the day in your household?*
3. How do you decide on what you buy/prepare and eat for the day?
 - i. Have you received advice from anyone on what to buy or how to prepare food? From whom?

8. DETAILS ON HYGIENE

1. What is your source of drinking water?
2. What if anything do you do to the water before drinking it or using it to wash your eating utensils? *If not mentioned probe:*
 - i. Do you usually boil/add chlorine to the water before drinking it? Why?

- ii. Do you think your water source provides safe enough water to drink without further purification? Why/why not?
- 3. Describe how you prepare your food starting from when you purchase your food (eg. Vegetables, meat, etc)
 - i. *If the respondent did not mention hand washing ask, why do you not wash your hands when preparing food?*
 - ii. *If the respondent mentioned hand washing ask, do you wash your hands with soap when preparing your food? Why/why not?*
 - iii. Do you usually wash your hands with soap when eating your food? Why/why not?

9. SUPPORT

- 1. From whom do you receive support in achieving good nutrition while pregnant?
 - a. Family members
 - b. Community members
 - c. Health workers
 - d. Male partner
- 2. What kind of support do you receive from each of the people you mentioned?
 - a. Is any of those people doing anything to ensure healthy foods are available for you? What?
 - b. Is any of those people doing anything to ensure you have the right information on healthy foods/eating during pregnancy? What do they do?
 - c. Is anything being done to ensure you have enough money to buy healthy foods?

10. BARRIERS AND FACILITATORS TO GOOD MATERNAL NUTRITION

- 1. What challenges do you encounter when trying to have good nutrition as a pregnant woman?
 - a. Lack of local availability of healthy foods (a) all year long (b) in some seasons?
 - b. Lack of funds to purchase foods?
 - c. Inability to grow foods?
 - d. Lack of support from family or community members?
 - e. Lack of information on good nutrition?
 - f. Need to balance the amount of food available to the entire household and me as a pregnant woman?
- 2. How do you address these challenges to support good nutrition for your pregnant partner?
- 3. What factors have helped you in achieving good nutrition?
 - a. Local availability of healthy foods all year long?
 - b. Enough funds to purchase foods?
 - c. Ability to grow healthy foods?
 - d. Support from family or community members?
 - e. Information on good nutrition
 - i.

11. COMMUNICATION CHANNELS

- 3. How did you learn about healthy nutrition for pregnant women?
 - a. From whom have you learned about nutrition?
 - i. Male partner?
 - ii. Family?
 - iii. Community leaders?
 - iv. Health workers?

- v. Nutrition programs/ Nutrition campaign?
 - b. How did they share the information with you?
 - vi. Through discussions?
 - vii. During visits to the clinic?
 - viii. Print materials (brochure, poster, etc)?
 - ix. Media (TV, radio, etc)?
 - c. How helpful was the information?
 - d. How helpful was the way in which they shared the information?
4. Is there is any information you wish you had about maternal nutrition but haven't received?
 - a. If so, what is it?
 - b. Why do you think this information would be helpful?
 5. How would you like to receive more information on maternal nutrition?
 - a. From who?
 - b. Through what format? (through discussions, print materials, TV, radio, etc)?

12. KNOWLEDGE OF EXISTING BCC EFFORTS

1. What learning opportunities exist in your community for you to learn about nutrition during pregnancy?
 - a. If learning opportunities exist, what is involved in those learning opportunities?
 - b. Are there any opportunities to learn how to prepare various types of foods to achieve good nutrition?
 - i. Who and how are these activities conducted or information shared?
2. How well do you think existing efforts to educate communities on healthy nutrition for pregnant has helped to improve your community practicing good nutrition behaviours? Why?
3. How would you recommend improving the way programs are implemented to encourage more community members to practice and support healthy maternal nutrition behaviours?

24 hour dietary recall:

Ask the pregnant woman to recall all the foods and beverages she has consumed in the 24 hours prior to your conversation with her. Ask her about the ingredients used, how much she ate, and how the food was prepared (e.g. raw vs. cooked). If the food was cooked, indicate how it was cooked (e.g. boiled, baked, fried, etc).

Hour/ Time	Food/Drink	Ingredients	Amount she ate	How food was prepared (raw or cooked)	If cooked, how the food was prepared (e.g. boiled, baked, fried, etc)

Other regular foods

Ask the mother if there are any other foods that she has eaten in the past week that she did not eat in the previous 24 hours. Ask the mother about:

- The ingredients of the foods/drinks mentioned;
- How often she ate these other foods/drinks during the past week;
- The amount that she ate; and
- How the food or drink was prepared.

If the mother does not mention any fruits, vegetables or animal source foods, probe:

- Did you eat any fruits? Any vegetables?
- Did you eat any type of animal products, such as eggs, meat, or milk?

Food/Drink	Ingredients	How often the food/drink was eaten during the past 7 days	Amount	How food or drink was prepared

End time: _____

Name and Signature of Supervisor: _____

Appendix 3: Interview Guide for Male Partners

Formative Research on Knowledge, Attitudes and Practices of Maternal Nutrition during Pregnancy in Solwezi and Chavuma Districts Interview Guide for Male Partners of Pregnant Women

1. INTRODUCTION:

Now that we have reviewed the information about the study based on the information sheet, we will now proceed to conduct the interview. However, before we begin, I'd like to review some rules or guidelines for today's discussion. These rules are our guidelines for operating so that we can complete our task in a manner that is respectful and provides you with the opportunity to express your thoughts safely and confidentially.

- You have been invited here to offer your experiences, views and opinions.
- Again, there are no right or wrong answers.
- It's okay to be critical. I want to hear your views and opinions about whether you like or dislike something you see or hear.
- This session will be audio taped. This allows us to capture everything that is being said today, and we will include the information in a report.
- There will be observers.
- All of your answers will be confidential, so feel free to say exactly what is on your mind. Nothing will be attributed to any particular person in our report.
- You may excuse yourself from the conversation at any time for any reason.
- Lastly, please turn off the ringers on your cell phone.

Do you have any questions at this time?

Yes: _____ No: _____ [If Yes, answer the question if possible.]

Is it okay for us to proceed with the interview?

Yes: _____ No: _____ [If No, terminate and thank respondent for their time]

1. DEMOGRAPHIC INFORMATION

- i. Date: _____ Interview start time: _____
- ii. Community: _____
- iii. Address: _____
- iv. Interviewer: _____
- v. Age: _____ Birthdate (if known): _____
- vi. Number of children by age: _____
- vii. Occupation (if any): _____
- viii. Education level: _____
- ix. Marital status: _____

2. HEALTH AND DIET OF A PREGNANT WOMAN

1. How is the health of your partner, in general?
2. How is the pregnancy progressing? Do you think it is progressing well?
 - a. What, if any, problem is your partner experiencing during her pregnancy?
 - b. What are the causes for that?
 - c. Is there anything that you have done to help her? If yes, please describe what you have done.
3. Does your partner eat any differently because she is pregnant?
 - a. What does she do differently?
 - b. Is there anything else do you think she should do differently?

3. KNOWLEDGE OF HEALTHLY MATERNAL NUTRITION

1. What kind of diet/foods do you think your partner should eat?
 - b. Do you think she should eat more or less of foods like beans, rice and nshima?
 - c. Do you think she should eat more or less of foods like eggs, milk, caterpillars, fish, and meats?
 - d. Do you think she should eat more or less of fruits and vegetables like rape and Chinese cabbage?
 - e. Do you think she should eat any local or wild foods? Which ones?
2. How many meals and snacks per day do you think your partner should eat?
3. What would be an example of a healthy meal for your partner?
 - a. What would be the quantities or size of the foods in the example meal?
4. Why is it important for pregnant to have a healthy diet?
 - a. How does her diet affect her health?
 - b. How does her diet affect the health of her baby?

4. SUPPORT FOR HEALTHY NUTRITION

1. How do you support your partner in achieving good nutrition while pregnant?
 - a. Are you doing anything to ensure healthy foods are available for your pregnant partner? What?
 - b. Are you doing anything to ensure your pregnant partner has the right information on healthy foods/eating during pregnancy? What?
 - c. Are you doing anything to obtain additional information/ support from others about how best to achieve good nutrition? What?
2. What type of support do you and your partner receive from others (family, community members, health workers) to achieve good nutrition for your partner?
 - a. Providing healthy foods?
 - b. Providing money to purchase or help grow food?
 - c. Providing information or advice on healthy foods?

5. BARRIERS AND FACILITATORS TO GOOD MATERNAL NUTRITION

1. What challenges do you encounter when trying to support good nutrition for your pregnant partner?
 - a. Lack of local availability of healthy foods (a) all year long (b) in some seasons?
 - b. Lack of funds to purchase foods?
 - c. Inability to grow foods?
 - d. Lack of support from family or community members?
 - e. Lack of information on good nutrition?
2. How do you address these challenges to support good nutrition for your pregnant partner?
3. What factors have helped to support your partner in achieving good nutrition?
 - a. Local availability of healthy foods all year long?
 - b. Enough funds to purchase foods?
 - c. Ability to grow healthy foods?
 - d. Support from family or community members?
 - e. Information on good nutrition?

6. COMMUNICATION CHANNELS

1. How did you learn about healthy nutrition for pregnant women?
 - e. From whom have you learned about nutrition?
 - i. Female partner?
 - ii. Family?
 - iii. Community leaders?
 - iv. Health workers?
 - v. A nutrition health program/Nutrition campaign?
 - f. How did they share the information with you?
 - vi. Through discussions?
 - vii. During visits to the clinic?
 - viii. Print materials (brochure, poster, etc)?
 - ix. Media (TV, radio, etc)?
 - g. How helpful was the information?
 - h. How helpful was the way in which they shared the information?
2. Is there is any information you wish you had about maternal nutrition but haven't received?
 - c. If so, what is it?
 - d. Why do you think this information would be helpful?
3. How would you like to receive more information on maternal nutrition?
 - c. From who?
 - d. Through what format? (through discussions, print materials, TV, radio, etc)?

7. KNOWLEDGE OF EXISTING BCC EFFORTS

1. What learning opportunities exist in your community for you to learn about nutrition during pregnancy?
 - a. If learning opportunities exist, what is involved in those learning opportunities?
 - b. Are there any opportunities to learn how to prepare various types of foods to achieve good nutrition?
 - i. Who and how are these activities conducted or information shared?

2. How well do you think existing efforts to educate communities on healthy nutrition for pregnant has helped to improve your community practicing good nutrition behaviours? Why?
3. How would you recommend improving the way programs are implemented to encourage more community members to practice and support healthy maternal nutrition behaviours?

CLOSING

I will now ask you to see _____, the logistics person, to receive your participation fee and he will ask you to acknowledge that you received the money by signing in the payment sheet.

Thank you very much for coming and for sharing your ideas with us—we really appreciate your time.

Interview end time: _____

Appendix 4: Interview Guide for Health Workers

Formative Research on Knowledge, Attitudes and Practices of Maternal Nutrition during Pregnancy in Solwezi and Chavuma Districts Interview Guide for Health Workers

1. INTRODUCTION

Now that we have reviewed the information about the study based on the information sheet, we will now proceed to conduct the interview. However, before we begin, I'd like to review some rules or guidelines for today's discussion. These rules are our guidelines for operating so that we can complete our task in a manner that is respectful and provides you with the opportunity to express your thoughts safely and confidentially.

- You have been invited here to offer your experiences, views and opinions.
- Again, there are no right or wrong answers.
- It's okay to be critical. I want to hear your views and opinions about whether you like or dislike something you see or hear.
- This session will be audio taped. This allows us to capture everything that is being said today, and we will include the information in a report.
- There will be observers.
- All of your answers will be confidential, so feel free to say exactly what is on your mind. Nothing will be attributed to any particular person in our report.
- You may excuse yourself from the conversation at any time for any reason.
- Lastly, please turn off the ringers on your cell phone.

Do you have any questions at this time?

Yes: _____ No: _____ [If Yes, answer the question if possible.]

Is it okay for us to proceed with the interview?

Yes: _____ No: _____ [If No, terminate and thank respondent for their time]

2. DEMOGRAPHIC INFORMATION

- x. Date: _____ Interview start time: _____
- xi. Community: _____
- xii. Address: _____
- xiii. Interviewer: _____
- xiv. Occupation: _____
- xv. Years working in occupation: _____
- xvi. Education level: _____

3. CURRENT PRACTICES IN ANC AND NUTRITIONAL GUIDANCE

1. How do you conduct antenatal care for the communities that you serve?
2. What specific antenatal care services do you provide to women at different stages of the pregnancy?
 - a. During the first trimester?
 - b. During the second trimester?
 - c. During the third trimester?
3. What type of information do you normally focus on sharing with pregnant women and their partners?
4. What information do you share with women specifically about nutrition during pregnancy?
5. What information about nutrition during pregnancy is most important to share? Why?
6. What recommendations on nutrition do pregnant women and their partners seem most likely to use at home?
 - a. Why do you think these recommendations are most likely to be followed?
7. What recommendations on nutrition do pregnant women and their partners seem most likely NOT to use at home?
 - a. Why do you think these recommendations are most likely NOT to be followed?
8. How do you share information about nutrition with the women and their partners?
 - a. Community activities?
 - b. Discussions?
 - c. Printed materials (posters, pamphlets)?
9. Which channels do you think are best for sharing information on nutrition during pregnancy?
 - a. Why are these channels the best ones?

4. PERCEPTION OF THE STATUS OF MATERNAL NUTRITION

1. Do you find that pregnant women eat differently than when they are not pregnant?
 - a. How do they normally eat differently?
 - b. Is there anything else you think they should do differently?
2. On average, what are the common foods that pregnant women eat?
 - f. Do you think they should eat more or less of foods like beans, rice and nshima?
 - g. Do you think they should eat more or less of foods like eggs, milk, caterpillars, fish, and meats?
 - h. Do you think they should eat more or less of fruits and vegetables like rape and Chinese cabbage?
 - i. Do you think they should eat any local or wild foods? Which ones?
3. On average, how many meals and snacks per day do you think pregnant women eat?
4. How well do pregnant women understand the importance of a healthy diet when pregnant?
 - a. How it affects their health?
 - b. How it affects the health of the babies?

5. BARRIERS AND FACILITATORS TO GOOD MATERNAL NUTRITION

1. What challenges do pregnant women and their partners encounter when trying to support good nutrition?
 - a. Lack of local availability of healthy foods all year long?
 - b. Lack of funds to purchase foods?
 - c. Inability to grow foods?
 - d. Lack of support from family or community members?
 - e. Lack of information on good nutrition?
2. How would you suggest addressing these challenges to support good nutrition for pregnant women?
3. What factors help to support pregnant women in achieving good nutrition?
 - a. Local availability of healthy foods all year long?
 - b. Enough funds to purchase foods?
 - c. Ability to grow healthy foods?
 - d. Support from family or community members?
 - e. Information on good nutrition?

6. KNOWLEDGE OF EXISTING BCC EFFORTS

1. What learning opportunities exist in your community for pregnant women to learn about nutrition during pregnancy other than what you already mentioned?
 - a. If learning opportunities exist, what is involved in those learning opportunities?
 - b. Are there any opportunities to learn how to prepare various types of foods to achieve good nutrition?
 - i. Who and how are these activities conducted or information shared?

2. How well do you think existing efforts to educate communities on healthy nutrition for pregnant has helped to improve your community practicing good nutrition behaviours? Why?
 - a. Have women or their partners mentioned any particular efforts or materials that have produced or distributed as a part of the efforts?
 - ii. If so, what did they say? Did they find the effort and corresponding materials helpful?
 - iii. How have they applied the information to their diets?
3. How would you recommend improving the way programs are implemented to encourage more community members to practice and support healthy maternal nutrition behaviours?

CLOSING

I will now ask you to see _____, the logistics person, to receive your participation fee and he will ask you to acknowledge that you received the money by signing in the payment sheet. Thank you very much for coming and for sharing your ideas with us—we really appreciate your time.

Interview end time: _____

Appendix 5: Focus Group Discussion Guide for Pregnant Women

Formative Research on Knowledge, Attitudes and Practices Of Maternal Nutrition During Pregnancy In Solwezi And Chavuma Districts Focus Group Discussion Guide for Pregnant Women

1. INTRODUCTION:

Now that we have reviewed the information about the study based on the information sheet, we will now proceed to conduct the interview. However, before we begin, I'd like to review some rules or guidelines for today's discussion. These rules are our guidelines for operating so that we can complete our task in a manner that is respectful and provides you with the opportunity to express your thoughts safely and confidentially.

- You have been invited here to offer your experiences, views and opinions.
- Again, there are no right or wrong answers.
- It's okay to be critical. I want to hear your views and opinions about whether you like or dislike something you see or hear.
- This session will be audio taped. This allows us to capture everything that is being said today, and we will include the information in a report to our client.
- There will be observers from the ministry of health and from Communications Support for Health.
- All of your answers will be confidential, so feel free to say exactly what is on your mind. Nothing will be attributed to any particular person in our report.
- You may excuse yourself from the discussion at any time for any reason.
- I will encourage you to speak one at a time during the discussion to allow chance for each and every one to speak
- I will also ask you to respect the opinions of every one as all views are valuable to us
- There is no right or wrong answer and everyone is encouraged to speak
- Lastly, please turn off the ringer on your cell phone.

Do you have any questions at this time?

Yes:_____ **No:**_____

Is it okay for us to proceed with the interview?

Yes: _____ No: _____ [If No, terminate and thank respondent for their time]

2. DEMOGRAPHIC INFORMATION

- xi. Date: _____
- xii. Interview start time: _____
- xiii. Community: _____
- xiv. Interviewer: _____ Age group of Women: _____

Characteristics of Respondents

	Age	Marital status	Level of education	Number of children	Occupation	Months pregnant

3. KNOWLEDGE ABOUT MATERNAL NUTRITION AND IMPACT ON CHILD AND MOTHER

- a. *Have you ever attended a session where you learnt anything about what to eat during your pregnancy? What?*
- b. *What food/kind of diet do you think you should eat to be healthy as a pregnant woman?*
 - i. *Are you supposed to eat differently at different stages (in months) of your pregnancy? if yes, in what ways?*
 - ii. *How many meals is a pregnant woman supposed to have? why?*
- c. *How is your eating related to your health and that of your unborn child?*

4. COMMON EATING TABOOS

1. How has your diet changed since you became pregnant?
 - i. What do you do differently? Why?
 - ii. What differences if any have you made to your eating in terms of quantity of food, type of food and frequency (number of times) of meals as compared to the time before you became pregnant? Why did you make those changes?
 - iii. Have you changed any of the ways that you prepare food since you have been pregnant? For example what about fried foods? What about foods with salt or sugar?
2. What foods, if any, do you think you should not eat as a woman who is pregnant? What will happen if you do not follow that?
3. What are some common beliefs in your community about nutrition during pregnancy?
 - a. What are the common foods that pregnant women in your community eat because they are pregnant? Why?
 - b. What are the common foods that pregnant women in your community DO NOT eat because they are pregnant? Why?
4. Who in your community encourages women to follow these beliefs?
 - a. How influential are they on pregnant and their partners? Do they normally change the maternal diets based on these beliefs?

5. HYGIENE PRACTICES

13. What is your source of drinking water in this community?
14. What if anything do you do to the water before drinking it or using it to wash your eating utensils? *If not mentioned probe:*
 - a. Do you usually boil/add chlorine to the water before drinking it? Why?
 - b. Do you think your water source provides safe enough water to drink without further purification? Why/why not?
15. In what situations/circumstances do you wash your hands as a diarrhea prevention effort?
 - a. How common is hand washing is when preparing meals?
 - b. how common is hand washing
 - c. how common is hand washing with soap in your community? in what circumstances do pregnant women usually wash their hands with soap? Why?
 - d. In what circumstances do pregnant women in your community not wash their hands with soap? Why not?

Do pregnant women in your community usually wash hands with soap when eating meals? Why?
16. What is your source of drinking water in this community?
17. What if anything do you do to the water before drinking it or using it to wash your eating utensils? *If not mentioned probe:*
 - a. Do you usually boil/add chlorine to the water before drinking it? Why?
 - b. Do you think your water source provides safe enough water to drink without further purification? Why/why not?
18. In what situations/circumstances do you wash your hands as a diarrhea prevention effort?
 - a. How common is hand washing is when preparing meals?

- b. how common is hand washing
- c. how common is hand washing with soap in your community? in what circumstances do pregnant women usually wash their hands with soap? Why?
- d. In what circumstances do pregnant women in your community not wash their hands with soap? Why not?
- e. Do pregnant women in your community usually wash hands with soap when eating meals? Why?

6. SUPPORT

1. In your community, from whom do you receive support in order for you to achieve good nutrition?
 - i. Who supports you with money and or food contributions during pregnancy?
 - ii. Who gives you information about good nutrition during pregnancy? What kind of information? How the information is provided (discussions, community events, print materials, etc)?

7. FACILITATORS AND BARRIERS TO HEALTHY DIET

- a. What if anything makes it easy for you to have healthy foods in the right quantities and have the right number of meals for a pregnant woman?
 - i. How important is your partner in supporting you to achieve good nutrition?
 - ii. Is the food you know you should eat as a pregnant woman always available in your community?
 - iii. What do you do to ensure that the food you need as a pregnant woman is always available for you to eat?
 - iv. Does support from other people affect your ability to eat health foods?
 1. Support from community members?
 2. Support from family members?
 3. Support from health workers?
- b. What if anything makes it difficult for you to eat the right food, in the correct quantities and frequency as a pregnant woman?
 - i. Is the food you know you should eat as a pregnant woman always available in your community/household? How does this affect your diet?
 - ii. What do you do to ensure that the food you need as a pregnant woman is always available for you to eat?
 - iii. What do you do to ensure every member of your household has enough food?
 1. How does that affect the type/quantity and frequency of meals you eat as a pregnant woman?
 - iv. What, if any foods, do you always eat even when you know they are not the healthiest of foods?
 - v. How does money affect the quantity of food you eat, the number of times you eat and the frequency of meals you have?
 - vi. How does season affect the quantity of food you eat, the number of times you eat and the frequency of meals you have?
 - vii. How do others in your community influence what you eat as pregnant women?

- viii. In a situation where there is not enough food in your household, who is mostly prioritized to eat the little food available? Start with the most prioritized and end with the least prioritized? Why?

8. KNOWLEDGE AND EFFECT OF CURRENT BCC EFFORTS AND RECOMMENDATIONS FOR IMPROVEMENT

1. What if any learning opportunities exist in your community for you to learn about nutrition during pregnancy?
 - i. *If learning opportunities exist ask*, what is involved in those learning opportunities?
2. What, if any learning opportunities exist in your community for you to learn how to prepare various types of foods to achieve good nutrition? Who and where are those activities conducted?
3. To what extent do you think the existing behaviour change programs aimed to teach pregnant women about good nutrition are adequate to help women in your community practice good nutrition behaviours? Why?
4. What improvements would you recommend to be made to the way they implement their programs so that they better help pregnant women achieve good nutrition? Why?

End time: _____

Name and Signature of Supervisor: _____

Appendix 6: Information Sheet for Pregnant Women in Focus Group Discussions

Formative Research on Knowledge, Attitudes and Practices of Maternal Nutrition During Pregnancy in Solwezi And Chavuma Districts

Focus Group Participants Information Sheet

Introduction: Good morning/afternoon. My name is _____ and I am a research assistant working with the Ministry of Health on a study focussing on Knowledge, Attitudes and Practices (KAP) in maternal nutrition during pregnancy. I am inviting you to participate in a discussing with 8 other people, who are like you, from your community. By talking with you, the Ministry of Health will learn about ways to improve how to reach pregnant women with healthy nutrition information for them to achieve good health for the baby and for themselves.

However, before you decide whether to participate, you should understand why the interviews are being done and what it will involve. Please take the time to listen as I read the following information. You may talk to others about the study if you wish. Please ask me if there is anything that is not clear, or if you would like more information. When all of your questions have been answered and you feel that you understand this study, you will be asked if you wish to participate in the study, and if yes, you will be asked to sign a separate Informed Consent form. You will also be given a signed copy to keep.

Purpose of the study: the aim of the study is to collect information about what communities understand and practice nutrition during pregnancy in order to inform maternal nutrition programmes and contribute to an improvement in nutrition interventions aimed to improve the health of pregnant women and their children.

If you are willing to participate, you will be asked questions about your current nutrition practices, your beliefs/attitudes, social norms, barrier and facilitating factors to achieving good nutrition during pregnancy. We are gathering your views to identify ways of improving nutrition intervention in your area. The interview will be based on following an interview guide.

Why have I been invited to take part?: You have been invited to take part because you are a member of this community you are between the ages of 18-49. You are being invited to participate on your free will and you are not in any way obliged to participate in this interview.

Potential risk: Some of the questions we will be asking might be considered personal and intrusive. In case you need assistance or want to discuss private issues related to maternal nutrition during pregnancy, we will refer you to the right person.

Duration of participation: The interview will last about 60 minutes.

Confidentiality: The interview will be strictly confidential. The responses will not be shared with anyone. Your name will only be recorded on the assent form, which will be kept separate from the interviews and discussions. We would like to ask you for permission to tape record the interview. Your interview responses will be combined with responses from other respondents and no one will be able to identify your responses. The tapes will be destroyed after the finalization of the study. The information gathered will only be used for the stated purpose.

Benefits and compensation: The intention for this project is to contribute towards better responsive maternal nutrition during pregnancy. The project will modestly compensate you by treating you with a meal/snack and also providing a participation fee of ZMW 50.

Use of Recorder: The interview will be audio recorded. This will allow us to capture everything that is being said today, as we may not remember everything. However, no identifiers will be recorded

Reimbursement: You will be given a participation fee of K50, 000 for participating in this study and you will be required to provide proof that you received the money from me by signing on a form that is not part of the research notes.

Rights: Your participation in this study is completely voluntary. If you decide not to participate, you will not lose any existing benefits to which you are entitled. If you agree to participate in this study, you may end your participation at any time without penalty or loss of existing benefits to which you are entitled. If you decide to take part, you are free to skip any questions.

Use of Findings: The results of the study will be discussed to improve the design and implementation of campaigns in your community. As mentioned before, the results will not bear your name or anything to identify you personally.

Ethics Review: This study has been reviewed and approved by the Ministry of Health, ERES Converge Ethics board and the ICF Macro Research ethics boards.

If you wish to seek any clarification, please contact:

1. Kakoma K. Ernest, Principal Investigator, Senior Health Promotion Officer, P.O. Box 110099, Lusaka. Tel: +260977620805
2. The Chairperson, ERES Converge Ethics board, P/B 125, 33 Joseph Mwilwa Road, Rhodes Park, Lusaka. Tel: +260 955155633. Email: eresconverge@yahoo.co.uk

Appendix 7: Information Sheet for Pregnant Women in In-Depth Interviews

Formative Research on Knowledge, Attitudes and Practices of Maternal Nutrition during Pregnancy in Solwezi and Chavuma Districts In-depth Interviews Information Sheet

Introduction: Good morning/afternoon. My name is _____ and I am a research assistant working with the Ministry of Health on a study which is focussing on Knowledge, Attitudes and Practices (KAP) in maternal nutrition during pregnancy. I am inviting you to participate in a one to one interview with me. By talking with you, the Ministry of Health will learn about ways to improve how to reach pregnant women with healthy nutrition information for them to achieve good health for the baby and for themselves.

However, before you decide whether to participate, you should understand why the interviews are being done and what it will involve. Please take the time to listen as I read the following information. You may talk to others about the study if you wish. Please ask me if there is anything that is not clear, or if you would like more information. When all of your questions have been answered and you feel that you understand this study, you will be asked if you wish to participate in the study, and if yes, you will be asked to sign a separate Informed Consent form. You will also be given a signed copy to keep.

Purpose of the study: the aim of the study is to collect information about what communities understand and practice nutrition during pregnancy in order to inform maternal nutrition programmes and contribute to an improvement in nutrition interventions aimed to improve the health of pregnant women and their children.

If you are willing to participate, you will be asked questions about your current nutrition practices, your beliefs/attitudes, social norms, barrier and facilitating factors to achieving good nutrition during pregnancy. We are gathering your views to identify ways of improving nutrition intervention in your area. The interview will be based on following an interview guide.

Why have I been invited to take part?: You have been invited to take part because you are a member of this community you are between the ages of 18-49. You are being invited to participate on your free will and you are not in any way obliged to participate in this interview.

Potential risk: Some of the questions we will be asking might be considered personal and intrusive. In case you need assistance or want to discuss private issues related to maternal nutrition during pregnancy, we will refer you to the right person.

Duration of participation: The interview will last about 60 minutes.

Confidentiality: The interview will be strictly confidential. The responses will not be shared with anyone. Your name will only be recorded on the assent form, which will be kept separate from the interviews and discussions. We would like to ask you for permission to tape record the interview. Your interview responses will be combined with responses from other respondents and no one will be able to identify your responses. The tapes will be destroyed after the finalization of the study. The information gathered will only be used for the stated purpose.

Benefits and compensation: The intention for this project is to contribute towards better responsive maternal nutrition during pregnancy. The project will modestly compensate you by treating you with a meal/snack and also providing a participation fee of ZMW 50.

Use of Recorder: The interview will be audio recorded. This will allow us to capture everything that is being said today, as we may not remember everything. However, no identifiers will be recorded
Reimbursement: You will be given a participation fee of K50, 000 for participating in this study and you will be required to provide proof that you received the money from me by signing on a form that is not part of the research notes.

Rights: Your participation in this study is completely voluntary. If you decide not to participate, you will not lose any existing benefits to which you are entitled. If you agree to participate in this study, you may end your participation at any time without penalty or loss of existing benefits to which you are entitled. If you decide to take part, you are free to skip any questions.

Use of Findings: The results of the study will be discussed to improve the design and implementation of campaigns in your community. As mentioned before, the results will not bear your name or anything to identify you personally.

Ethics Review: This study has been reviewed and approved by the Ministry of Health, ERES Converge Ethics board and the ICF Macro Research ethics boards.

If you wish to seek any clarification, please contact:

1. Kakoma K. Ernest, Principal Investigator, Senior Health Promotion Officer, P.O. Box 110099, Lusaka. Tel: +260977620805
2. The Chairperson, ERES Converge Ethics board, P/B 125, 33 Joseph Mwilwa Road, Rhodes Park, Lusaka. Tel: +260 955155633. Email: eresconverge@yahoo.co.uk

Appendix 8: Information Sheet for Health Workers in In-Depth Interviews

Formative Research on Knowledge, Attitudes and Practices of Maternal Nutrition during Pregnancy in Solwezi and Chavuma Districts Indepth Interview with Health Workers Information Sheet

Introduction: Good morning/afternoon. My name is _____ and I am a research assistant working with the Ministry of Health on a study which is focussing on Knowledge, Attitudes and Practices (KAP) in maternal nutrition during pregnancy. I am inviting you to participate in a one to one interview with me. By talking with you, the Ministry of Health will learn about ways to improve how to reach pregnant women with healthy nutrition information for them to achieve good health for the baby and for themselves.

However, before you decide whether to participate, you should understand why the interviews are being done and what it will involve. Please take the time to listen as I read the following information. You may talk to others about the study if you wish. Please ask me if there is anything that is not clear, or if you would like more information. When all of your questions have been answered and you feel that you understand this study, you will be asked if you wish to participate in the study, and if yes, you will be asked to sign a separate Informed Consent form. You will also be given a signed copy to keep.

Purpose of the study: the aim of the study is to collect information about what any nutrition intervention in your catchment area, your perceptions on nutrition and any recommendations you may provide to help inform maternal nutrition programmes and contribute to an improvement in nutrition interventions aimed to improve the health of pregnant women and their children in your community.

If you are willing to participate, you will be asked questions about your perception of the nutrition situation, norms, barrier and facilitating factors to achieving good nutrition among women during pregnancy. We are gathering your views to identify ways of improving nutrition intervention in your area. The interview will be based on following an interview guide.

Why have I been invited to take part?: You have been invited to take part because you are a health worker working in this community. You are being invited to participate on your free will and you are not in any way obliged to participate in this interview.

Potential risk: the mJOR risk of participating in this study is the time it will take for you to sit in the nterview as sitting in the interview may take away time and prevent you from performing some other duties and or eat into your relaxing time.

Duration of participation: The interview will last about 60 minutes.

Confidentiality: The interview will be strictly confidential. The responses will not be shared with anyone. Your name will only be recorded on the assent form, which will be kept separate from the interviews and discussions. We would like to ask you for permission to tape record the interview. Your interview responses will be combined with responses from other respondents and no one will be able to identify your responses. The tapes will be destroyed after the finalization of the study. The information gathered will only be used for the stated purpose.

Benefits and compensation: The intention for this project is to contribute towards better responsive maternal nutrition during pregnancy. The project will modestly compensate you by treating you with a meal/snack and also providing a participation fee of ZMW 50.

Use of Recorder: The interview will be audio recorded. This will allow us to capture everything that is being said today, as we may not remember everything. However, no identifiers will be recorded
Reimbursement: You will be given a participation fee of K50, 000 for participating in this study and you will be required to provide proof that you received the money from me by signing on a form that is not part of the research notes.

Rights: Your participation in this study is completely voluntary. If you decide not to participate, you will not lose any existing benefits to which you are entitled. If you agree to participate in this study, you may end your participation at any time without penalty or loss of existing benefits to which you are entitled. If you decide to take part, you are free to skip any questions.

Use of Findings: The results of the study will be discussed to improve the design and implementation of campaigns in your community. As mentioned before, the results will not bear your name or anything to identify you personally.

Ethics Review: This study has been reviewed and approved by the Ministry of Health, ERES Converge Ethics board and the ICF Macro Research ethics boards.

If you wish to seek any clarification, please contact:

1. Kakoma K. Ernest, Principal Investigator, Senior Health Promotion Officer, P.O. Box 110099, Lusaka. Tel: +260977620805
2. The Chairperson, ERES Converge Ethics board, P/B 125, 33 Joseph Mwilwa Road, Rhodes Park, Lusaka. Tel: +260 955155633. Email: eresconverge@yahoo.co.uk

Appendix 9: Information Sheet for Male Partners in In-Depth Interviews

Formative Research on Knowledge, Attitudes and Practices of Maternal Nutrition during Pregnancy in Solwezi and Chavuma Districts

Indepth Interview with Male partner of Pregnant Women Information Sheet

Introduction: Good morning/afternoon. My name is _____ and I am a research assistant working with the Ministry of Health on a study which is focussing on Knowledge, Attitudes and Practices (KAP) in maternal nutrition during pregnancy. I am inviting you to participate in a one to one interview with me. By talking with you, the Ministry of Health will learn about ways to improve how to reach pregnant women with healthy nutrition information for them to achieve good health for the baby and for themselves.

However, before you decide whether to participate, you should understand why the interviews are being done and what it will involve. Please take the time to listen as I read the following information. You may talk to others about the study if you wish. Please ask me if there is anything that is not clear, or if you would like more information. When all of your questions have been answered and you feel that you understand this study, you will be asked if you wish to participate in the study, and if yes, you will be asked to sign a separate Informed Consent form. You will also be given a signed copy to keep.

Purpose of the study: the aim of the study is to collect information about what communities understand and practice nutrition during pregnancy in order to inform maternal nutrition programmes and contribute to an improvement in nutrition interventions aimed to improve the health of pregnant women and their children.

If you are willing to participate, you will be asked questions about your current nutrition practices, your beliefs/attitudes, social norms, barrier and facilitating factors to achieving good nutrition for a woman during pregnancy. We are gathering your views to identify ways of improving nutrition intervention in your area. The interview will be based on following an interview guide.

Why have I been invited to take part?: You have been invited to take part because you are a member of this community and you are a partner of a woman who is currently pregnant. You are also being considered for the interview because you are between the ages of 18-49. You are being invited to participate on your free will and you are not in any way obliged to participate in this interview.

Potential risk: Some of the questions we will be asking might be considered personal and intrusive. In case you need assistance or want to discuss private issues related to maternal nutrition during pregnancy, we will refer you to the right person.

Duration of participation: The interview will last about 60 minutes.

Confidentiality: The interview will be strictly confidential. The responses will not be shared with anyone. Your name will only be recorded on the assent form, which will be kept separate from the interviews and discussions. We would like to ask you for permission to tape record the interview. Your interview responses will be combined with responses from other respondents and no one will be able to identify your responses. The tapes will be destroyed after the finalization of the study. The information gathered will only be used for the stated purpose.

Benefits and compensation: The intention for this project is to contribute towards better responsive maternal nutrition during pregnancy. The project will modestly compensate you by treating you with a meal/snack and also providing a participation fee of ZMW 50.

Use of Recorder: The interview will be audio recorded. This will allow us to capture everything that is being said today, as we may not remember everything. However, no identifiers will be recorded

Reimbursement: You will be given a participation fee of K50, 000 for participating in this study and you will be required to provide proof that you received the money from me by signing on a form that is not part of the research notes.

Rights: Your participation in this study is completely voluntary. If you decide not to participate, you will not lose any existing benefits to which you are entitled. If you agree to participate in this study, you may end your participation at any time without penalty or loss of existing benefits to which you are entitled. If you decide to take part, you are free to skip any questions.

Use of Findings: The results of the study will be discussed to improve the design and implementation of campaigns in your community. As mentioned before, the results will not bear your name or anything to identify you personally.

Ethics Review: This study has been reviewed and approved by the Ministry of Health, ERES Converge Ethics board and the ICF Macro Research ethics boards.

If you wish to seek any clarification, please contact:

1. Kakoma K. Ernest, Principal Investigator, Senior Health Promotion Officer, P.O. Box 110099, Lusaka. Tel: +260977620805
2. The Chairperson, ERES Converge Ethics board, P/B 125, 33 Joseph Mwilwa Road, Rhodes Park, Lusaka. Tel: +260 955155633. Email: eresconverge@yahoo.co.uk

Appendix 10: Screening Tool for Pregnant Women in Interviews

Formative Research on Knowledge, Attitudes and Practices Of Maternal Nutrition During Pregnancy In Solwezi And Chavuma Districts Screener for Pregnant Women Interviews

General Recruiting Criteria

- Must be adult females (18 years and above).
- Must be currently pregnant – 18 weeks or over.

Notes

- Participants will receive ZMK 50,000 cash for participating.
- Participants will receive refreshments.
- Each interview will last approximately 60 minutes.
- All interviews will be audiotaped.
- The identity of the interview participants must remain confidential.
- Only one female can be recruited from each Health Facility.

Interviewer/Recruiter's Text

Hello, my name is _____. I am from the **Ministry of Health**. We are recruiting for a research project focusing on maternal nutrition during pregnancy. Your participation will help us to gain a better understanding of how to effectively communicate messages that would improve the health of women and their children.

1. May I ask you a few questions to see if you are eligible to participate in this study?

_____ Yes [**Continue.**]

_____ No [**Thank you; end interview.**]

2. Would you be willing to provide the interviewer with information about your pregnancy (*including the age of the pregnancy*)?

_____ Yes [**Continue.**]

_____ No [**Thank you; end interview.**]

3. Is your current pregnancy 18 weeks of gestation or above?

_____ Yes [**Continue.**]

_____ No [**Thank you; end interview.**]

4. What is your age?

_____ If younger than 18 [**Thank you; end interview.**]

_____ If 18 or older [**Continue.**]

We would like to invite you to participate in an interview. This **interview** will gather your opinions about maternal nutrition during pregnancy. The **interview** will be conducted by staff from the Ministry of Health with support from Communication Support for Health (CSH) and will be audiotaped. However, your participation in the **interview** will remain confidential. The tapes will be used to help the **interview** moderator generate a report. Non-identifying comments may be used in other reports, and your name will **NOT** be used in the reports. You will receive ZMK 50,000 for your participation.

[If asked:] The Communications Support for Health is a USAID-funded programme that fosters sustained individual and collective action for health through effective activities in information, education, and communication/behaviour change communication. It is comprised of staff from ICF International, Chemonics International, and the Manoff Group.

Are you interested in participating?

_____ Yes [**Continue.**]

_____ No [**Thank you; end interview.**]

Will you be available to participate at this time?

_____ Yes [**Continue.**]

_____ No [**Thank you; schedule another time for the interview.**]

If respondent is eligible to participate, provide the following information:

Interview date: _____ Time: _____

Location: _____

Appendix 11: Screening Tool for Pregnant Women in Focus Group Discussion

Formative Research on Knowledge, Attitudes and Practices of Maternal Nutrition during Pregnancy in Solwezi and Chavuma Districts Screener for Pregnant Women Focus Groups

General Recruiting Criteria

- Must be adult females (18 years and above).
- Must be currently pregnant – 18 weeks or over.

Notes

- Participants will receive ZMK 50,000 cash for participating.
- Participants will receive refreshments.
- Each focus group will last approximately 90 minutes.
- All focus groups will be audiotaped.
- The identity of the interview participants must remain confidential.
- Only one female can be recruited from each Health Facility.

Interviewer/Recruiter's Text

Hello, my name is _____. I am from the **Ministry of Health**. We are recruiting for a research project focusing on maternal nutrition during pregnancy. Your participation will help us to gain a better understanding of how to effectively communicate messages that would improve the health of women and their children.

1. May I ask you a few questions to see if you are eligible to participate in this study?

_____ Yes [**Continue.**]

_____ No [**Thank you; end interview.**]

2. Would you be willing to provide the interviewer with information about your pregnancy (*including the age of the pregnancy*)?

_____ Yes [**Continue.**]

_____ No [**Thank you; end interview.**]

3. Is your current pregnancy 18 weeks of gestation or above?

_____ Yes [**Continue.**]

_____ No [**Thank you; end interview.**]

4. What is your age?

_____ If younger than 18 [**Thank you; end interview.**]

_____ If 18 or older [**Continue.**]

We would like to invite you to participate in a focus group. This **focus group** will gather your opinions about maternal nutrition during pregnancy. The **focus group** will be conducted by staff from the Ministry of Health with support from Communication Support for Health (CSH) and will be audiotaped. The focus group will include your participation in a discussion on maternal health during pregnancy with 6 to 8 other people from your community. However, your participation in the **focus group** will remain confidential. The tapes will be used to help the **focus group** moderator generate a report. Non-identifying comments may be used in other reports, and your name will **NOT** be used in the reports. You will receive ZMK 50,000 for your participation.

[If asked:] The Communications Support for Health is a USAID-funded programme that fosters sustained individual and collective action for health through effective activities in information, education, and communication/behaviour change communication. It is comprised of staff from ICF International, Chemonics International, and the Manoff Group.

Are you interested in participating?

_____ Yes [**Continue.**]

_____ No [**Thank you; end interview.**]

Will you be available to participate at this time?

_____ Yes [**Continue.**]

_____ No [**Thank you; end the interview.**]

If respondent is eligible to participate, provide the following information:

Focus group date: _____ Time: _____

Location: _____

Appendix 12: Screening Tool for Male Partners of Pregnant Women in In-Depth Interviews

Formative Research on Knowledge, Attitudes and Practices of Maternal Nutrition during Pregnancy in Solwezi and Chavuma Districts Screener for Male Partners of Pregnant Women Interviews

General Recruiting Criteria

- Must be adult males (18 years and above).
- Must be a male partner of a woman who is currently pregnant – 18 weeks or over.

Notes

- Participants will receive ZMK 50,000 cash for participating.
- Participants will receive refreshments.
- Each interview will last approximately 60 minutes.
- All interviews will be audiotaped.
- The identity of the interview participants must remain confidential.
- Only one female can be recruited from each Health Facility.

Interviewer/Recruiter's Text

Hello, my name is _____. I am from the **Ministry of Health**. We are recruiting for a research project focusing on maternal nutrition during pregnancy. Your participation will help us to gain a better understanding of how to effectively communicate messages that would improve the health of women and their children.

1. May I ask you a few questions to see if you are eligible to participate in this study?

_____ Yes [**Continue.**]

_____ No [**Thank you; end interview.**]

2. Do you have a partner who is currently pregnant at 18 weeks of gestation or above?

_____ Yes [**Continue.**]

_____ No [**Thank you; end interview.**]

3. What is your age?

_____ If younger than 18 [**Thank you; end interview.**]

_____ If 18 or older [**Continue.**]

We would like to invite you to participate in an interview. This **interview** will gather your opinions about maternal nutrition during pregnancy. The **interview** will be conducted by staff from the Ministry of Health with support from Communication Support for Health (CSH) and will be audiotaped. However, your participation in the **interview** will remain confidential. The tapes will be used to help the **interview** moderator generate a report. Non-identifying comments may be used in other reports, and your name will **NOT** be used in the reports. You will receive ZMK 50,000 for your participation.

[If asked:] The Communications Support for Health is a USAID-funded programme that fosters sustained individual and collective action for health through effective activities in information, education, and communication/behaviour change communication. It is comprised of staff from ICF International, Chemonics International, and the Manoff Group.

Are you interested in participating?

_____ Yes [**Continue.**]

_____ No [**Thank you; end interview.**]

Will you be available to participate at this time?

_____ Yes [**Continue.**]

_____ No [**Thank you; schedule another time for the interview.**]

If respondent is eligible to participate, provide the following information:

Interview date: _____ Time: _____

Location: _____

Appendix 13: Screening Tool for Health Workers

Formative Research on Knowledge, Attitudes and Practices of Maternal Nutrition during Pregnancy in Solwezi and Chavuma Districts Screener for Health Worker Interviews

General Recruiting Criteria

- Must be adults (18 years and above).
- Must be a currently providing care to women pregnant – 18 weeks or over.

Notes

- Participants will receive ZMK 50,000 cash for participating.
- Participants will receive refreshments.
- Each interview will last approximately 60 minutes.
- All interviews will be audiotaped.
- The identity of the interview participants must remain confidential.
- Only one female can be recruited from each Health Facility.

Interviewer/Recruiter's Text

Hello, my name is _____. I am from the **Ministry of Health**. We are recruiting for a research project focusing on maternal nutrition during pregnancy. Your participation will help us to gain a better understanding of how to effectively communicate messages that would improve the health of women and their children.

1. May I ask you a few questions to see if you are eligible to participate in this study?

_____ Yes [**Continue.**]

_____ No [**Thank you; end interview.**]

2. Do you currently provide care to pregnant women who are 18 weeks or over?

_____ Yes [**Continue.**]

_____ No [**Thank you; end interview.**]

3. What is your age?

_____ If younger than 18 [**Thank you; end interview.**]

_____ If 18 or older [**Continue.**]

We would like to invite you to participate in an interview. This **interview** will gather your opinions about maternal nutrition during pregnancy. The **interview** will be conducted by staff from the Ministry of Health with support from Communication Support for Health (CSH) and will be

audiotaped. However, your participation in the **interview** will remain confidential. The tapes will be used to help the **interview** moderator generate a report. Non-identifying comments may be used in other reports, and your name will **NOT** be used in the reports. You will receive ZMK 50,000 for your participation.

[If asked:] The Communications Support for Health is a USAID-funded programme that fosters sustained individual and collective action for health through effective activities in information, education, and communication/behaviour change communication. It is comprised of staff from ICF International, Chemonics International, and the Manoff Group.

Are you interested in participating?

_____ Yes [**Continue.**]

_____ No [**Thank you; end interview.**]

Will you be available to participate at this time?

_____ Yes [**Continue.**]

_____ No [**Thank you; schedule another time for the interview.**]

If respondent is eligible to participate, provide the following information:

Interview date: _____ Time: _____

Location: _____

Appendix 14: Consent Forms for Pregnant Women

Formative Research on Knowledge, Attitudes and Practices of Maternal Nutrition during Pregnancy in Solwezi and Chavuma Districts Indepth Interview Guide for Pregnant Women Consent Form

Tick appropriately:

I confirm that I have read/ or the study information has been read to me and I understood the information sheet for the above study. [Yes/No]

I have had the opportunity to consider the information; I have had the opportunity to ask questions and have had these answered satisfactorily. [Yes/No]

I understand that my participation is voluntary and that I am free to withdraw at any time, without giving a reason [Yes/No]

I agree to take part in the study. [Yes/No]

Signature *(thumb print)

Date

Name of Interviewer

Date

Signature

*In case the respondent is not able to sign this form, this attests that the consent form has been read and explained accurately by a member of the research staff, and that the respondent has fixed his/her thumbprint as consent.

Study Team Member's Statement

I, the undersigned interviewer, have explained to the participant in a language he/she understands, and he/she understands the procedures to be followed in the study and the risks and benefits involved.

Signature of interviewer

Date

Appendix 15: Consent Forms for Pregnant Women in FGD Participants
Formative Research on Knowledge, Attitudes and Practices of Maternal Nutrition
during Pregnancy in Solwezi and Chavuma Districts
FGD Participant Consent Form

Tick appropriately:

I confirm that I have read/ or the study information has been read to me and I understood the information sheet for the above study. [Yes/No]

I have had the opportunity to consider the information; I have had the opportunity to ask questions and have had these answered satisfactorily. [Yes/No]

I understand that my participation is voluntary and that I am free to withdraw at any time, without giving a reason [Yes/No]

I agree to take part in the study. [Yes/No]

Signature *(thumb print) _____
Date

Name of Interviewer _____ _____
Date Signature

*In case the respondent is not able to sign this form, this attests that the consent form has been read and explained accurately by a member of the research staff, and that the respondent has fixed his/her thumbprint as consent.

Study Team Member’s Statement

I, the undersigned interviewer, have explained to the participant in a language he/she understands, and he/she understands the procedures to be followed in the study and the risks and benefits involved.

Signature of interviewer _____
Date

Appendix 16: Sample Note Taker Template

Date:		Method:	
Time:		Number of Participants:	
Location:		Moderator:	
Segment:		Note Taker:	
Section 1			
[INSERT ONE QUESTION AND CORRELATING PROBES]	[INSERT NOTES ON PARTICIPANT RESPONSES TO QUESTIONS]	[INSERT NOTES ON OBSERVATIONS]	
[INSERT ONE QUESTION AND CORRELATING PROBES]	[INSERT NOTES ON PARTICIPANT RESPONSES TO QUESTIONS]	[INSERT NOTES ON OBSERVATIONS]	
Section 2			
[INSERT ONE QUESTION AND CORRELATING PROBES]	[INSERT NOTES ON PARTICIPANT RESPONSES TO QUESTIONS]	[INSERT NOTES ON OBSERVATIONS]	
[INSERT ONE QUESTION AND CORRELATING PROBES]	[INSERT NOTES ON PARTICIPANT RESPONSES TO QUESTIONS]	[INSERT NOTES ON OBSERVATIONS]	
Section 3			
[INSERT ONE QUESTION AND CORRELATING PROBES]	[INSERT NOTES ON PARTICIPANT RESPONSES TO QUESTIONS]	[INSERT NOTES ON OBSERVATIONS]	
[INSERT ONE QUESTION AND CORRELATING PROBES]	[INSERT NOTES ON PARTICIPANT RESPONSES TO QUESTIONS]	[INSERT NOTES ON OBSERVATIONS]	
Section 4			
[INSERT ONE QUESTION AND CORRELATING PROBES]	[INSERT NOTES ON PARTICIPANT RESPONSES TO QUESTIONS]	[INSERT NOTES ON OBSERVATIONS]	
[INSERT ONE QUESTION AND CORRELATING PROBES]	[INSERT NOTES ON PARTICIPANT RESPONSES TO QUESTIONS]	[INSERT NOTES ON OBSERVATIONS]	

Appendix 17: Management Plan

No.	ORGANIZATION/PERSONS	ROLES.RESPONSIBILITIES
1	Communication Support for Health	<ul style="list-style-type: none"> • To support data collection training • Provide the research grant • Support data analysis • Review data collection tools • Review final report preparation and support Dissemination activities
2	MoH National level/REC	<ul style="list-style-type: none"> • Authorisation of the research • Ethical clearance • Monitor and supervise data collection • Adoption of recommendation for action (BCC formulation)
3	Ministry of Health PHO	<ul style="list-style-type: none"> • Supervise research • Act as secretariat • Conduct data analysis and preparation of final report
4	MoH District Health Offices	<ul style="list-style-type: none"> • Provide participants • Take part in final report preparation and presentation
5	PACA	<ul style="list-style-type: none"> • Supervise data collectors • Take part in final report preparation and presentation • Take part in data analysis
6	PITMEO	<ul style="list-style-type: none"> • Supervise data collectors • Take part in final report preparation and presentation • Take part in data analysis
7	SHPO	<ul style="list-style-type: none"> • Supervise data collectors • Final report preparation and presentation • Take part in data analysis
8	SHIO	<ul style="list-style-type: none"> • Supervise data collectors • Final report preparation and presentation