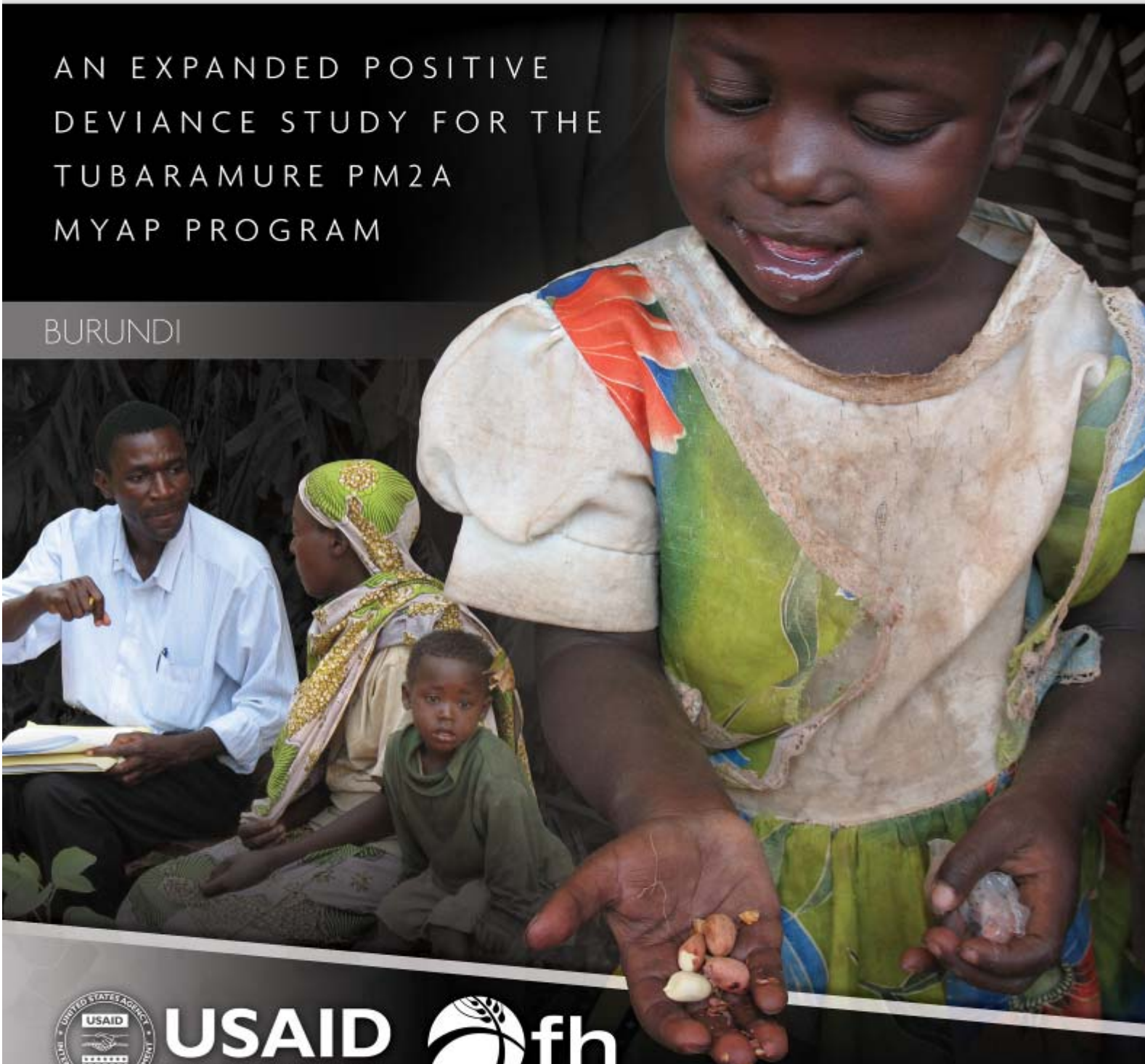
LOCAL DETERMINANTS OF MALNUTRITION

AN EXPANDED POSITIVE DEVIANCE STUDY FOR THE TUBARAMURE PM2A MYAP PROGRAM

BURUNDI



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THOMAS P. DAVIS JR., MPH
JULIE HETTINGER, MS, RD
PHIL MOSES, MPH

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Local Determinants of Malnutrition: An Expanded Positive Deviance Study

I. Background on the Approach and Development of the Study Instruments and Protocol

A. Background

The creation of the original Local Determinants of Malnutrition Study methodology (and the workshops based on it) was made possible through an Institutional Capacity Building grant (AFP-A-00-03-00008-0) from USAID as part of its Title II Food for Peace program.

Positive deviance studies from many countries have shown that there are often local determinants of child malnutrition, and local coping mechanisms for preventing child malnutrition. Some causes of malnutrition (e.g., lack of exclusive breastfeeding) are found in many countries where malnutrition is a problem. Other causes, however, are found in some countries, but not in others. Some causes of malnutrition may eventually be found in many countries, but have only been studied in a few countries at this point in time.

Currently, most positive deviance (PD) studies have focused on foods that make up a child's diet (food types, but not quantities or frequency of consumption), and assessing the "three goods": Good feeding practices, good child care practices, and good health care seeking practices (e.g., use of growth monitoring/promotion [GM/P] services). However, there are numerous other factors – and specific behaviors that fall into these three categories – that are associated with child malnutrition in some countries and have not been explored to date in most PD studies.

Examples of previously under-investigated but important factors include depression in the mother[1], intake of specific nutrients (e.g., magnesium, potassium and phosphorus[2]), domestic abuse, and alcoholism among family members. For some of these, scientific studies have shown a relationship in some countries, but little has been done to measure or quantify the effect in developing country settings. Little has been done to explain these associations to private voluntary organizations (PVOs) as well, so they can include interventions to combat these potential causes of malnutrition. For others, only anecdotal evidence exists and more study is needed. More needs to be known about the links between these potential local determinants of malnutrition and food insecurity so that we can do more to combat these causes of malnutrition.

One reason for this under-investigation is that it was previously assumed that little could be done to change the situation – in developing countries – when problems with mental illness, substance abuse (e.g., alcoholism), or certain nutrient deficiencies were found. This is changing, however, as new

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[1] See Carvalhaes MA, Benicio MH. (2002) Mother's ability of childcare and children malnutrition. Rev Saude Publica 2002 Apr;36(2):188-97. This study found correlations between depression in the mother and malnutrition in the child. Depression is the leading burden of disease in women in Latin America.

[2] See Golden, M.H. (1988) The role of individual nutrient deficiencies in growth retardation of children as exemplified by zinc and protein. In: Linear growth retardation in less developed countries, pp. 143-163. Ed. Waterlow, J.C. Raven press, New york. Also see, http://pfeda.univ-lille1.fr/Ngonut/2000/0003f.htm where Dr. Michael Golden states, "[W]e should not be tackling this [malnutrition] problem by only giving type I nutrients (micronutrient bullets) some protein and energy. The forgotten type II nutrients [NB: e.g., magnesium and potassium] are critical.

interventions related to these and other problems are tried out in developing countries. For example, World Vision recently carried out a low-cost project in Uganda to decrease depression. Community-level workers were taught to work with people in groups for "talk therapy" which decreased depression by 92% (as compared to a 42% reduction in a control group – which indicates that some depression will resolve on its own accord).[3]

Within the context of USAID/FFP's strategic framework, and the implications and needs identified in the field during its Institutional Support Activity (ISA) grant, Food for the Hungry (FH) identified five priority areas that were addressed under its Institutional Capacity Building (ICB) Program. They were:

1) reducing food insecurity in vulnerable populations by selecting or developing innovative tools to assess vulnerabilities and predict and mitigate food security risks and shocks;
2) field guidance for the effective utilization of Title II resources with a focus on food as food;
3) capacity building of food security partners;
4) new country program assessment and initiation; and
5) collaboration to create an evidence base and best practices in Title II programming.

This study was carried out to respond to the first, third and fifth priority areas. This study fits with FH's goal of increasing the impact of FH's Title II food security programs in reducing food insecurity via the promotion of innovative technical capabilities within FH and improving core competencies of its food security partners. Specifically, this study helps to achieve our objective of:

- selecting or developing innovative, high-quality tools to assess food security vulnerabilities and predict and mitigate food security risks and shocks in vulnerable populations; and
- training staff in the use of these tools.

FH conducted Local Determinants of Malnutrition workshops in Mozambique (September 2004), Kenya (September 2005), Bolivia (August 2007), and Ethiopia (May 2008). During these workshops, participants learned how to carry out this "expanded PD study" that helped them to identify potential local determinants of malnutrition which may increase a child's vulnerability to food insecurity.

To conduct the LDM studies mothers of children 12-59m are divided into three groups – those with a child who is well nourished (weight-for-age Z score (WAZ)>-1.0), those who were malnourished (WAZ<-2.0) and those who fell in between those two groups. Mothers of those who fell between the two limits received a brief health talk and returned home. A longer LDM questionnaire was used to interview the remaining mothers of PD and malnourished children 12-59m of age. After the surveys, the data from these two groups was compared to determine how the two groups differ on each question and scales based on series of questions. The data from these studies is providing Food for the Hungry with more insights into what practices and foods should be promoted in each country context, and what additional interventions should be considered in FH's health and nutrition programs.

Finding Associations, Not Causes

One thing that should be mentioned from the onset is that this sort of study helps one to find things that are *associated* with malnutrition. That means that they "co-exist" with malnutrition. For example, if you did a study and found that people who drink alcohol a lot are also angry, you could

[3] See http://bjp.rcpsych.org/cgi/content/full/188/6/567

not be sure if being angry led people to drink, or if drinking led people to be angry a lot … or if both simply co-existed without a mechanism between the two (confounding).

However, finding out which factors are *associated* with malnutrition can be very helpful in identifying things that may very well be *causative* of malnutrition. It is important, though, to look for factors that are logically connected – via a mechanism – to malnutrition. For that reason, as part of this study, we have looked through the scientific literature to find things that are associated with malnutrition and thought to be causative of malnutrition because a mechanism for causation exists.

For example, it is known that people who are depressed often do not find much interest or pleasure in doing many of their usual daily tasks. They are also less responsive to the usual stimuli in their life (e.g., a child crying). It is possible to see a mechanism, therefore, whereby depression makes it difficult for a mother to do the things for her child that she may otherwise ordinarily do (e.g., feeding the child five times a day, washing her hands with soap). Since a possible mechanism can be seen, if it is found that mothers of malnourished children are also depressed, it would be worthwhile to see if treating the depression would help her to better care for her child. The next step in the scientific process would be to try out an intervention in a limited area and see if it helps to reduce malnutrition.

Local Determinants of Malnutrition Study (LDM) vs. Hearth

The LDM Study is an expanded positive deviance study but it is not a study that would be done as part of the Hearth nutritional rehabilitation model. In the Hearth PD study, it is important to concentrate on more basic causes of malnutrition. One reason for this is that mothers should be highly involved in carrying out the type of PD study done as part of a Hearth program. It is critical that they understand these causes and see the results of their actions. The questions used during the PD study which is part of the Hearth model are necessarily more limited and should focus on things that the mothers themselves can do to resolve the problem. For these reasons, we discourage organizations from using this type of expanded PD study (referred to in this report as the Local Determinants of Malnutrition Study) during their community-level Hearth rehabilitation program. Of course, some of the questions used in this type of study *may be* useful to include in the PD study which is done as part of Hearth, but one would definitely not use all or most of the questions that are part of this study.

The questions in this Local Determinants of Malnutrition questionnaire, however, may be helpful in identifying entirely new areas of intervention that an organization can take on to reduce malnutrition. It may also identify questions which should be used more routinely in Hearth PD studies. Ideally, this LDM study would be conducted at the beginning of a project period (as a stand-alone study) in order to identify what messaging and interventions may be needed, and to identify important questions that should be added to the routine PD questionnaire used during Hearth. The most important changes needed in order to reverse malnutrition in an area will most likely continue to be changes in feeding practices, care of the child, and health care seeking behavior.

B. Literature Review

The following steps were conducted to create the LDM study questionnaire used in this study:

- The literature on causes of malnutrition was reviewed by Phil Moses, MPH and Tom Davis, MPH. They first examined positive deviance studies and then looked at other studies on malnutrition that provided information on the causes. They specifically looked for causes dealing with nutrient intake, feeding practices, and psycho-social causes.

- They then developed matrices (see **Annex A**) that showed different types of possible determinants, the strength of the association, the feasibility of measuring it, the degree to which it was susceptible to change during a Hearth nutritional rehabilitation program, and susceptibility to change outside of a Hearth program (e.g., through a different intervention). Each of the possible determinants were scored. The determinants with the highest scores were then slated for inclusion in the questionnaire.
- A questionnaire was developed (**Annex B and C**) that included questions that have been used in other PD studies and ones that were developed by project staff when pretested questions were not available.

C. Findings from the Literature Review

(See Annex A, summarized matrices on determinants of malnutrition created by Mr. Moses and Mr. Davis. A more detailed matrix is available upon request from FH. A full list of citations for the research studies examined is provided in the more detailed version of the matrices.)

D. The Local Determinants of Malnutrition Study Methodology - Mozambique

The first LDM study was carried out in Mozambique by Tom Davis, MPH (FH's Director of Health Programs), and Adugna Kebede, MD, MPH (FH/Mozambique's Health and Nutrition Program Manager) in September 2005. The LDM methodology was refined and improved during the first study and lessons learned have been applied to all other LDM studies FH has facilitated. The experience and lessons learned during the Mozambique study are included here to explain the LDM methodology and rational behind adjustments made to the original methodology.

Participants in the Mozambique LDM workshop included the Title II health programs' District Coordinators, Supervisors, and selected Health Promoters. Participants had past experience with conducting interviews as part of KPC surveys and other quantitative and qualitative studies.

1. Participants were divided into two teams. Each team was composed of four interviewers and one supervisor. Each team visited a different community.
2. Each team attempted to interview at least 15 mothers of malnourished children and 15 PD children (according to criteria established for choosing each group). In the two communities combined, interviewers were able to find 21 PD children and 33 malnourished children in these communities.
3. A designated team member (e.g., the Supervisor) read and explained the informed consent statement to the mothers. Each mother was asked for consent using the informed consent statement prior to the actual interview, as well. Mothers who chose not to participate were thanked for their time. (All mothers chose to participate).
4. Team members worked together to first weigh (and in some cases, measure) both mothers and children. (We were unable to analyze mothers' BMI because we lacked height data on many mothers. Later, we decided to remove both height and weight measurement of mothers from the study, and height measurement for children, given time and logistical considerations.) The mothers of children who were neither PD nor malnourished were thanked for their involvement, received a brief health talk, and were sent home. The mothers who were included in the survey did *not* participate in this health talk or hear it since it might have influenced their answers.
5. Mothers selected for interviews sat together and were called out one-by-one for the interview (in a private area). Supervisors were responsible for assuring that the questionnaire was being used appropriately by each interviewer and that mothers were guided to the proper locations for

interviews or snack/waiting. The Supervisor also helped fill in the box where mother's caregiving behavior was observed. (This was also later removed from future surveys since there was not adequate opportunity to observe mothers' caregiving behavior.) Supervisors checked the completed questionnaires to be sure that they were filled out properly. If there were any questions that were not filled in properly, the Supervisor asked the mother those questions and completed the questionnaire.

E. The Local Determinants of Malnutrition Study Methodology – Burundi

The Burundi LDM study was conducted as a part of the formative research activities in the Tubaramure PM2A MYAP Program. The Tubaramure Program is a five year collaborative maternal and child health program between Catholic Relief Services (CRS), IMC (International Medical Corps), and FH. The program focuses on increasing appropriate health and nutrition behaviors practices among households, improving the access to quality nutrition and health services for women and children, and increasing the intake of nutrient-rich, diverse foods particularly for pregnant and lactating women and children 6-23m. This formative research is made possible through a Preventing Malnutrition in Children Under 2 Approach (PM2A) grant from USAID (AID-FFP-09-00004-00) as part of its Multi-Year Assistance Program (MYAP) Title II Food for Peace program.

Tom Davis, MPH (FH's Director of Health Programs) and Julie Hettinger, MS RD (FH's Maternal and Child Nutrition Specialist) facilitated the Burundi study and training workshop in August/September 2009. The majority of participants in the workshop consisted of third and fourth year Burundian public health and nursing students from Hope Africa University and the National Institute of Public Health. Other staff from IMC, CRS, and FH also attended the training for a total of 21 participants. For the most part, the training and study followed the same protocols as the LDM Studies in Mozambique, Kenya, Ethiopia, and Bolivia. The following descriptions highlight the slight modifications and contextualization of the Burundi LDM study.

The LDM study selects participants as would be done in a case-controlled study. In order to assure "cases" were drawn from the entire project area the following methodology was used to select participants: The Tubaramure project is operating in two of Burundi's seventeen provinces, Ruyigi and Cankuzo. These two provinces are made up of 6 "communes" and each commune is further divided into health zones and then hills (or "collines" in French). Three "communes" from each province were randomly selected for the data collection sites. Within the six communes selected there are sixteen health zones. One "colline" was randomly selected from each of the sixteen health zones as the location for the LDM interviews to take place. Six interviews were conducted in each colline. In three cases it was unrealistic for logistical purposes to travel to the colline, and three other collines from the same or a neighboring health zone were substituted. As this is a case-control study and not a cross-sectional study, strict random sampling of participants was not necessary.

The workshop participants were divided into four teams, each comprised of a supervisor, two triage members, and two interviewers. Over the course of two days, the teams were able to interview an average of six caregivers of PD or malnourished children in each of the sixteen collines in the regions of Ruyigi and Cankuzo. After collecting all the data, the questionnaires were reviewed by the trainers to confirm that the PD and malnourished children had been correctly identified at triage, and two misidentified ones were removed from the data set. The final data set was comprised of 46 mothers of Positive Deviants (PDs) and 48 mothers of malnourished children, all 12-48m of age.

Triage team members were given refresher training on how to weigh children. The supervisors on the teams determined if the children qualified for the study based on their age and nutritional status

using a table provided to them (one for boys and one for girls). Children targeted for the study were between 12 and 35 months of age, however, older children between the ages of 36 and 47 months were included in some collines when there were not enough children found that qualified for the study in the younger age group. Children were classified as PD if their weight for age Z-score (WAZ) was greater than -1, and classified as malnourished if their WAZ was less than -2. During the workshop all of the students received training plus supervised practice time to solidify their interviewing techniques. The interviews with the caregivers of PD or malnourished children were carried out in the local language of Kirundi, and took place in private locations to facilitate a safe environment for the caregiver to give candid answers. The questionnaires did not include information as to whether the child was malnourished or PD in order to prevent bias on the part of the interviewer. (This information was added to the questionnaire by the triage personnel once the interview was complete.) During the interview, one question asked the caregiver[4] (in the majority of cases this was the mother) to quantify the number of days in the past week that her child ate certain foods. In addition to free-listing of foods eaten by the child in the last 24 hours, the mother was asked about specific foods given to the child. The list of foods for this section were derived from the Kirundi names for foods that people normally eat or might possibly eat, plus foods that are available in the market, and positive deviant foods identified in the literature that exist in Burundi.

Besides checking the questionnaires for completeness, the team member Supervisors and trainers periodically observed the interviews to make sure the interviewers were using the questionnaires appropriately. Some interviewing errors were caught early on and rectified. For example, some interviewers were observed to not say "Anything else?" after some multiple response questions. They were coached on their performance to assure that they would not repeat this error. After the first day of interviewing, the teams were brought together to deal with any issues they discovered during the data collection process and to clarify procedures.

F. Analysis of the Data

Data from the questionnaires was entered by the workshop participants and tabulated using a program written by FH's Director of Health Programs for Epi-Info 6.04d. The trainers checked 20% of the data on the computer against the written questionnaires to confirm that it was entered correctly. Data was checked after each set of 10 questionnaires were entered by a team. If even one meaningful error (e.g. not misspellings) was found in the data entered, the participants were charged with checking all the data entered in that series. The trainers then rechecked 20% of the set again, drawing the questionnaires to check at random (without replacement). The statistical analysis program tabulated responses for each question and calculated scores (e.g., tolerance of abuse, social support, hygiene index) based on multiple questions. Findings from this analysis are included in the sections below. Differences between the PD and malnourished groups were considered to be statistically significant if the p value was less than 0.05, or if the range for the 95% confidence interval for the odds ratio (done as part of the analysis) did not include 1.0. (Uncorrected p-values [as opposed to Mantel-Haenszel or Corrected] were used for this purpose.) A majority of the statistically significant results were tested for confounding by age. Of those tested, only a small amount of confounding by age was found in one variable, the "Child defecated in proper place last defecation" finding. In the rest of the statistically-significant results, no confounding by age was found.

[4] In Burundi the majority of respondents were mothers. Less than 5% of caregivers were Grandmothers. No other family or non-family members identified themselves as the primary caregiver to the child. For this reason "mother" will be used in all future instances in this report to refer to the primary caregiver of the PD or malnourished children.

II. Statistically-Significant Findings - Burundi

Complete results that were not statistically significant are mentioned in **Annex D**. Statistically-significant or nearly significant results (e.g., p=0.06) are highlighted below.

1. *Child Feeding Practices*

Statistically-significant differences were found between mothers of PD and malnourished children concerning child feeding practices as measured by the following variables:

- Encouraging a non-hungry child to eat
- Size of child at birth (mother's report)
- Currently breastfeeding

63% of mothers of PD children said that they encourage their child to eat when s/he does not want to eat or refuses to eat. Only 38% of mothers of malnourished children said that they do so (p=0.01). The odds ratio for this variable was 0.35 (0.14 < OR < 0.89) meaning that **mothers of PD children were three times more likely to encourage their non-hungry child to eat than mothers of malnourished children**.

91% of mothers of PD children vs. 71% of mothers of malnourished children reported that their infant was average, large, or very large at birth compared to other newborns in the community (p=0.01). The odds ratio for this variable is 0.23 (0.06 < OR < 0.86) which means that **mothers of PD children are four times more likely to claim that they gave birth to an average or above average sized baby**.

52% of mothers of PD children vs. 83% of mothers of malnourished children reported that they were currently breastfeeding (p=0.002). The odds ratio for this variable is 0.22 (0.07 < OR < 0.64) which means that **mothers of malnourished children are four and a half times more likely to be currently breastfeeding compared to mothers of PD children**. This result warrants further investigation as it seems counter-intuitive. Further analysis revealed that these results were not confounded by age, even though the mean age for PD children was 27 months and the mean age for malnourished children was 21 months. Only 29.6% of the mothers of PD children with children 24-47m of age weaned their child before 24m vs. 15.8% of the mothers of malnourished children with children 24-47m of age. So the trend is to continue breastfeeding past 24m, and more so for children who are malnourished. Possible explanations are that mothers of malnourished children are choosing to continue breastfeeding *because* their child is malnourished or because they lack sufficient food to provide in lieu of breastmilk or because they are unaware of proper complementary feeding practices.

A statistically-significant difference was found between PD and malnourished children as measured by the following variable:

- Initiation of breastfeeding within one hour after birth (immediate breastfeeding)

83% of mothers of PD children said that they initiated breastfeeding within one hour after delivery. 63% of mothers of malnourished children said that they did so (p=0.032). The odds ratio for the immediate breastfeeding variable was 0.34 (0.11 < OR < 1.04) meaning that **mothers of PD children are three times more likely to breastfeed within the first hour after birth**.

2. *Foods Consumed by the Mother during breastfeeding*

Maternal diet during breastfeeding was found to be particularly important. Statistically-significant differences were found between mothers of PD and malnourished children concerning the mother's diet during lactation as measured by the following variables:

- Mother's consumption of retinol-rich foods during breastfeeding
- Mother's consumption of B6-rich foods during breastfeeding
- Mother's consumption of zinc-rich foods during breastfeeding
- Mother's consumption of protein-rich foods during breastfeeding

100% of mothers of PD children said that they consumed retinol-rich foods while they were breastfeeding compared to 85% of mothers of malnourished children ($p=0.009$). The odds ratio for this variable was 0.0 ($0.0 < OR < 0.82$). **Mothers of PD children are more likely to consume foods high in retinol – such as organ meats (liver, kidney, etc.) – while they were/are breastfeeding.**

47% of mothers of PD children vs. 23% of mothers of malnourished children reported that they consumed vitamin B6-rich foods while they were breastfeeding ($p=0.02$). The odds ratio for this variable is 0.34 ($0.12 < OR < 0.93$) which means that **mothers of PD children are three times more likely to consume foods high in B6 – such as liver, garlic and whole grain rice – while they were/are breastfeeding**.

81% of mothers of PD children said that they consumed zinc-rich foods while they were breastfeeding compared to 63% of mothers of malnourished children ($p=0.046$). The odds ratio for this variable was 0.38 ($0.13 < OR < 1.11$) meaning that **mothers of PD children are 2.6 times more likely to consume foods high in zinc –** such as nuts, organ meats, and red meat – while they were/are breastfeeding.

100% of mothers of PD children vs. 90% of mothers of malnourished children reported that they consumed protein-rich foods while they were breastfeeding ($p=0.03$). The odds ratio for this variable is 0.0 ($0.0 < OR < 1.27$). Mothers of PD children are more likely to consume foods high in protein – such as all bean varieties, nuts, fish, meat, and eggs – while they were/are breastfeeding.

3. *Specific Foods Consumed by the Child*

Statistically-significant and nearly significant differences were seen between mothers of PD and malnourished children concerning the child's consumption of the following foods:

- Salt
- Taro
- Organ Meats

Mothers of PD children are seven times more likely to have given their child salt in the past 24 hours. A full 98% of mothers of PD children included salt in their food vs. 86% of mothers of malnourished children ($p=0.04$). The odds ratio for this variable is 0.14 ($0.02 < OR < 1.16$). This connection to nutritional status could be due to the effect of iodine (since most

mothers who used salt claimed to be using a brand that was iodized) or simply due to increased consumption of food by the child because the added salt improves the food's flavor.

Mothers of PD children are four times more likely to have <u>given their child taro</u> (a root crop) in the previous 24 hours. 37% of mothers of PD children fed their child taro compared with 12% of mothers of malnourished children ($p=0.004$). The odds ratio for this variable is 0.23 ($0.08 < OR < 0.66$). Taro is high in the micronutrients **manganese, potassium, Vitamin E and B6** which are associated with growth and cellular integrity. (It also contains phytate, which binds some micronutrients and limits their bioavailability.)

Mothers of PD children <u>give their children organ meats</u> 2.6 times more often per week compared with mothers of malnourished children ($p=0.04$). PD children ate organ meats an average of 0.39 times per week while malnourished children ate them an average of 0.15 times per week. Organ meats, such as liver, kidney, heart, giblets, and gizzards are a good source of nutrients such as **retinol, zinc**, and **vitamins B6** and **B12** which are associated with growth and metabolism.

4. ***Child Care Practices***

A statistically-significant difference was found between mothers of PD and malnourished children concerning child care practices as measured by the following variable:

- Average hours for which the child is away from the mother each day

A nearly statistically significant difference (CI included 1.0) was found between mothers of PD and malnourished children as measured by the following variable:

- Mother always takes child with her when outside of home

On average, **mothers of PD children were <u>away from their children longer during the day</u> than mothers of malnourished children**. Mothers of PD children were away from their children an average of 5.7 hours on average most days compared to 4.0 hours on average for mothers of malnourished children ($p<0.0000$). This trend was congruent with another nearly significant variable, the mothers' practice of always taking the child with her when they leave to go outside the home.

Only 28% of mothers of PD children said that they <u>always take their child with them when outside the home</u> compared to 48% of mothers of malnourished children who said that they did this ($p=0.05$). The odds ratio for this variable was 2.34 ($0.91 < OR < 6.08$) meaning that **mothers of PD children are two times more likely to not take their child with them when they go outside the home during the day**.

This warrants further investigation as it is counter-intuitive. It could be that mothers of PD children who are more likely to be working for cash or gifts in kind are working outside the home and leaving their children at home. Perhaps more mothers of malnourished children are always taking their children with them because they are currently breastfeeding *because* the child is malnourished.

5. ***Healthcare Seeking Behavior and Home Management of Sick Children***

Statistically-significant differences were found between mothers of PD and malnourished children concerning the mother's healthcare seeking behavior and home management of sick children as measured by the following variables:

- Child not sick with any disease during the past two weeks
- Child not sick with diarrhea during the past two weeks
- Child not sick with other diseases (aside from diarrhea, ARI, fever or malaria) during the past two weeks

65% of mothers of PD children said that their child was not sick in the past two weeks. 25% of mothers of malnourished children said that their child was not sick ($p=0.0001$). The odds ratio for this variable is 0.18 ($0.06 < OR < 0.48$) meaning that **PD children were 5.5 times less likely to have any disease in the past two weeks**.

83% of mothers of PD children vs. 48% of mothers of malnourished children reported that their child was not sick with diarrhea during the previous two weeks ($p=0.0004$). The odds ratio for this variable is 5.16 ($1.81 < OR < 15.14$) meaning that **PD children were five times less likely to have diarrhea in the past two weeks**. (An analysis of factors associated with diarrhea in the past two weeks was also done – see **Annex E**.)

96% of mothers of PD children said that their child was not sick with other diseases in the past two weeks. 81% of mothers of malnourished children said that their child was not sick with diseases other than diarrhea, ARI, fever or malaria ($p=0.029$). The odds ratio for this variable is 5.08 ($0.92 < OR < 36.89$) which means that **PD children are five times less likely to have had some other disease in the past two weeks**.

6. ***Mother/Caregiver's Acceptance of (and Responsiveness to) Child***

A statistically-significant difference was found between mothers of PD and malnourished children concerning the mother's acceptance of – and responsiveness to – the child as measured by the following variable:

- Child (12-48m of age) is not hit or spanked

78% of mothers of PD children vs. 48% of mothers of malnourished children said that they hit or spank their child zero times in the past week ($p=0.002$). The odds ratio for this variable is 3.91 ($1.45 < OR < 10.79$) meaning that **malnourished children were four times more likely to have been hit or spanked in the past week**. Spanking or hitting these young children could affect the bond between the mother and child and the child's eating behavior, or it could be that malnourished children – being more anorexic and irritable – may incur their parent's wrath more often.

7. ***Mother/Caregiver's Support Network***

A statistically-significant (and counter-intuitive) difference was found between mothers of PD and malnourished children concerning the mother's support network as measured by the following variable:

- How often the mother of the child visits or talks with other friends or family outside of the household

Mothers of malnourished children were 3.6 times more likely to often visit friends or family members outside the household. Only 54% of mothers of PD children said that they often visit or talk with a friend or family member outside of their household vs. 81% of mothers of malnourished children who said that they did this ($p=0.005$). "Often" is defined as several times a day or week. The odds ratio for this variable was 3.64 ($1.30 < OR < 10.37$). This seems counter-intuitive and warrants further investigation. It could be that mothers of malnourished children are visiting friends and family members so often that they are ignoring the needs of their children. Or perhaps the mothers of malnourished children are seeking out support to get help for their child. Another possible connection is that when mothers visit friends and family members so often, their children are exposed to many different pathogens, increasing their chance of illness and subsequently, becoming malnourished.

8. ***Hygiene Practices***

A statistically-significant difference was found between mothers of PD and malnourished children concerning the mother's hygiene practices as measured by the following variable:

- Whether or not the child defecated in a proper place the last time s/he did so

Mothers were asked an open-ended question concerning where the child last defecated, and then a response category was ticked based on her response (without prompting). 57% of mothers of PD children indicated that their child defecated in a proper spot the last time they defecated. 23% of mothers of malnourished children said that their child did this ($p=0.0008$). The odds ratio for this variable is 0.23 ($0.08 < OR < 0.61$) meaning that **mothers of PD children were four times more likely to have a child who defecated in a proper spot at last defecation.**

9. ***Mother's Income-generating work***

A nearly statistically-significant difference ($p=0.052$) was found between mothers of PD and malnourished children as measured by the following variable:

- Mother doing cash work in last 12m

39% of mothers of PD children said that they had done work for which they were paid in cash or in kind during the last 12 months. 21% of mothers of malnourished children said that they did this. The odds ratio for this variable was 2.44 ($0.89 < OR < 6.82$) meaning that **mothers of PD children are more than twice as likely to claim that they are working for cash or gifts in kind**.

III. Implications Based on Results of LDM Study for Burundi

Given these results, FH facilitated the discussion of the findings with Tubaramure Program staff (including personnel from CRS, IMC, Caritas, and FH). The suggested actions and educational messages which are summarized on the following pages are the result of these discussions plus input from FH headquarters' staff specialists. Some of the results warrant further investigation and the authors recommend utilizing a focus group setting to facilitate this process. The basic messages will be supplemented with other additional messages targeted at specific determinants of the behavior, especially for behaviors examined by the Tubaramure Barrier Analysis study. These actions and messages will be incorporated into the Tubaramure program activities, particularly the Care Group curriculum and radio spots, in order to promote appropriate health and nutrition behaviors practices among households. Also, additional discussions with staff on how to use these results will be conducted during future trainings and meetings.

Findings, Suggested Action and Suggested Health Promotion Messages Based on Results of LDM Study (FH/Burundi)

Finding	Question/Information
1. Mothers of PD children were four times more likely to **give birth to an average, large, or very large baby.**	How large was (NAME) when he/she was born in comparison to other newborn/babies in the community: very small, somewhat smaller than average, average, somewhat larger than average, or very large?
Additional Questions to Consider:	
▪ How is food distributed in the family? ▪ When a woman is pregnant is she given more, less, or the same portions of food as when she is not pregnant? ▪ Are there taboos or restrictions about what pregnant women can eat? ▪ What do people think about having a big baby or a small baby? ▪ Why do some women have large babies and other's small? ▪ Do women usually go to the health center for prenatal consults?	
Suggested Action	**Suggested Educational Messages**
▪ Supervisors and Promoters coordinate with the MOH to determine: 1. if iron tablets are available at the local health facility and what the recommendation dose and duration is for pregnant and lactating women, 2. determine if the supply of iron tablets is sufficient to respond to local need. 3. if the MOH would be interested or open to using the Care Group network to ensure pregnant and lactating women are able to obtain a consistent supply of iron tablets.	▪ Geophagy* (eating dirt) or Pica (the eating of inappropriate objects and material) cravings indicate a person's physiological need for micronutrients. (*Geophagy, the regular and deliberate consumption of soil, is prevalent among pregnant women in sub-Saharan Africa. The clay commonly ingested in Africa contains important nutrients such as: phosphorus, potassium, magnesium, copper, zinc, manganese, and iron.) http://www.ajtmh.org/cgi/content/abstract/80/1/36, http://geography.about.com/cs/culturalgeography/a/geophagy.html
▪ If the supply of iron tablets is insufficient or inconsistent, FH supervisors can ask permission of the local MOH to coordinate with the national MOH and external donors to increase and improve supply.	▪ Help women who eat dirt to connect that craving with their need to go for prenatal visits, take iron supplements, and eat a diverse, colorful diet that can provide the micronutrients (phosphorus, potassium, magnesium, copper, zinc, manganese, and iron) that pregnant and lactating women need.
▪ Recipe demonstrations or contests teaching women how to prepare iron rich foods for pregnant women (especially using organ meats).	▪ Importance of Prenatal consults to ensuring the healthy growth of infants while in the womb.
▪ Investigate negative feelings women have about having a "big" baby through focus groups.	▪ Importance of a diverse diet – include all 3 food groups at each meal.
▪ Diffuse untrue beliefs and taboos about the consequences of eating certain foods during pregnancy using radio spots. (Examples: Liver is a taboo food for pregnant women because they believe the child will not have teeth if they eat liver. There are also people who don't allow their women or children to eat liver, because they say it will cause them to lose their teeth. Some women believe that if pregnant women consume lots of milk and avocado they will have babies that are too big.)	▪ Pregnant women need to eat more often than usual and more food than usual. Families can help by allowing women to determine the portion size she needs.
▪ Help women plan for alternative, economical foods to consume when normal foods (beans, oil, etc.) are not appetizing during Care Group discussions.	▪ Pregnant women need to eat more foods rich in protein. Families can help by allocating money and resources to make sure foods like meat, chicken, fish, and eggs are available for the pregnant woman to prepare. ▪ A pregnant woman sometimes doesn't want to eat what she normally eat (like beans) because it is unappetizing and makes her feel sick. Families should ensure that there are nutritious replacements that the woman can eat so that she doesn't lack food. ▪ Pregnant women need extra rest, they should plan their schedules to sleep for 8 hours a night and take naps if needed.
Finding	**Question/Information**
2. Mothers of PD children were more likely to **consume foods high in retinol while breastfeeding**. (Foods such as liver, kidney, and other organ meats.)	When you were (or while you are) breastfeeding (NAME), did you usually eat (or do you usually eat) any of the following foods?
Additional Questions to Consider:	
▪ Are their certain foods breastfeeding women are encouraged to eat? ▪ Do people generally believe there is a connection between what a breastfeeding woman eats and what is in the breastmilk? ▪ How should a special diet for breastfeeding women be promoted?	
Suggested Action	**Suggested Educational Messages**
▪ Teach mothers the value of eating organ meats rich in retinol in addition to other special foods rich in retinol, such as margarine, butter, canned fish, and cheese, during Care Group discussions.	▪ What BF women consume affects the quality of their milk. Eating organ meats, such as liver and kidney, will make a breastfeeding mother's milk better. (i.e. will increase quantity of retinol in milk)

Finding	Question / Information
3. Mothers of PD children are three times more likely to **consume foods high in pyridoxine (B6) while breastfeeding**. (foods such as liver, garlic, and whole grain rice)	Same question as above.
Suggested Action	**Suggested Educational Messages**
▪ Cankuzo produces a lot of rice and a kilo of rice is about four times the cost of taro, so the people will sell the rice and buy four times the taro. Promote saving some of the rice that is cultivated so the BF mothers can eat it in Care Group discussions. ▪ Liver is very expensive, even in the city it is very expensive – not many people can buy this. It could be promoted as a "special" food in Care Group curriculum. ▪ Many do not know the nutritional value of garlic, so we should promote it in Care Group discussions. Garlic is available in Burundi, even cultivated and sold. It is mostly available in Muslim populations and consumed by them on a daily basis. ▪ Women cultivate their fields and men sell the harvest to pay his bills, so there is no money to pay for these types of expensive but nutritious foods. Investigate how can women gain more power over the food they grow and the money it makes through focus groups.	▪ What BF women consume affects the quality of their milk. This may mean eating special foods every once in awhile (liver, rice, etc) to help your baby grow strong from your milk. ▪ Did you know garlic is more than a spice? Use some everyday to season your food and make your milk better. ▪ Rice is worth more than the money you can sell it for. Eating rice will make your milk better and your baby stronger. ▪ Taro is a great food for children when they start to eat solid foods, but rice is better for the breastfeeding mother (i.e. consuming rice increases the quantity of pyridoxine in her body). Make sure you save some rice for yourself and give the taro to your child.
Finding	**Question / Information**
4. Mothers of PD children are 2.6 times more likely to **consume foods high in zinc while breastfeeding**. (foods such as nuts, seeds, organ meats, and red meat)	Same question as above.
Suggested Action	**Suggested Educational Messages**
▪ Teach women how to roast and salt squash and pumpkin seeds (high in Zinc) during Care Group meeting. Could be a great snack to take with them while working!	▪ Did you know that the seeds left over from pumpkins and squash can make a tasty, low cost snack and be good for breastfeeding mothers? Learn how to prepare them at your next Care Group meeting. ▪ What BF women consume affects the quality of their milk. Eating peanuts makes your milk better (i.e. increase levels of zinc) and will help your baby grow strong from your milk. Peanuts can be eaten in many different forms – roasted, ground into flour, or ground into paste. See how many creative ways you can find to enjoy peanuts. ▪ What BF women consume affects the quality of their milk. This may mean eating special foods every once in awhile (organ meats, red meats) to help your baby grow strong from your milk.
Finding	**Question / Information**
5. Mothers of PD children are more likely to **consume foods high in protein while breastfeeding**. (foods such as beans, nuts, fish, meat, and eggs)	Same question as above.
Suggested Action	**Suggested Educational Messages**
▪ Help women plan for high protein foods to consume during Care Group discussions. ▪ Correct misunderstandings in families via radio spots of the type and quantity of foods breastfeeding mothers need to make good milk for the baby and keep her strong. ▪ During Care Group discussions, teach mothers that breastmilk is good even when a mother lacks certain nutrients, but it is even better quality when the mother eats a better diet. A good maternal diet also helps the mother.	▪ Is your wife breastfeeding? Now she needs to eat more meat than usual. Plan to buy meat, fish, peanuts and eggs more often than usual to help your wife make good milk for your baby.
Finding	**Question / Information**
6. Counter-intuitively, mothers of **PD children were away from their children longer during the day** (5.7 hours) in comparison to mothers	For how many hours of the day are you usually away from (NAME) most days?
Additional Questions to Consider:	
▪ Who cares for children when their mother is working? ▪ What instructions are normally given to people caring for children when the mother is away? ▪ Is it normal for women to leave their children when they are away? ▪ Why would children be better nourished when away from their mothers for longer periods of time?	

Suggested Action	Suggested Educational Messages
Not clear what action should be taken based on this finding. ***This should be explored using qualitative methods.*** In a focus group setting, use the "additional questions to consider" to investigate the context of a mother leaving her child in the care of another. What are these substitute caregivers doing to keep the child well nourished? ▪ Normally during harvest times they take the breastfeeding child to the field and leave the child under a tree. But if she leaves the child in the home, usually a grandmother or older child takes care of it. If it is an older woman, it's possible that they are feeding the child better than the mother does, or at least differently. Children who are 2 – 2.5 years are usually weaned and left in the home.	▪ Educational messages can be based on focus group findings.
Finding	**Question / Information**
7. **Counter-intuitively, mothers of PD children are two times more likely to leave their children during the day when they go**	How often do you take (NAME) with you when you go outside the home to cultivate your fields or go to market?
Additional Questions to Consider:	
▪ What happens to children when they are taken to work with their mothers? (Are they exposed to illnesses, not fed, left in the sun/cold/rain?) ▪ If it's not an option to leave a child at home what advice should be given to mothers about caring for their child at work?	
Suggested Action	**Suggested Educational Messages**
▪ Not clear what action should be taken based on this finding. ▪ In a focus group setting, use the "additional questions to consider" to investigate the context of a mother leaving her child in the care of another. Explore how the child is cared for when left at home, and by whom, and how they are cared for when they are taken out with the mother.	▪ Educational messages can be based on focus group findings.
Finding	**Question / Information**
8. **Counter-intuitively, mothers of *malnourished* children were 3.6 times more likely to visit or talk to friends or family members outside the household on a frequent basis** (frequent= several times a day or several times a week)	How often do you usually visit or talk with a friend or family member who lives outside of your household?
Additional Questions to Consider:	
▪ Why would children be more malnourished if their caregiver is more social? ▪ Are children exposed to more illness from other children? ▪ What normally happens when a woman visits a friend or family member with her child? Is the child offered food? Does the child play with other ▪ Is poor advice offered?	
Suggested Action	**Suggested Educational Messages**
▪ Not clear what action should be taken based on this finding. ▪ Participants who responded associated visiting as a negative activity - one of lazy people who don't want to work. They felt that lazy women go visit and beg around when visiting. In a focus group setting, use the "additional questions to consider" to investigate the context of a mother visiting friends and family often. Explore what motivates women to visit others and the assumption that women who visit often are lazy. What are other characteristics of "lazy" mothers?	▪ Educational messages can be based on focus group findings.
Finding	**Question / Information**
9. Mothers of PD children are more than twice as likely to be **working for cash or gifts in kind**.	In the last 12 months, have you done any work for which you got paid in cash or in kind? Yes or No
Additional Questions to Consider:	
▪ If a mother is working does this mean that the child will be better fed? *In general it's true, because it is an additional resource. Apart from the* ▪ Do mothers have control over the money they earn and can spend it care for their children? *Depends on the agreement between husband and* ▪ Do mothers have less control over money made by the husband? *In general, almost everywhere, very few women have a say as to how the* ▪ Is it considered good for a woman to earn cash or gifts in kind or is she expected to be staying at home caring for the house? *It is good that the* ▪ Would it be a positive thing to recommend that more women work for cash or gifts in kind? *As above, thinking of the proverbs: two are better* ▪ *When both husband and wife are working, then the resources are sufficient. If both can find a place to work then there is additional support for*	
Suggested Action	**Suggested Educational Messages**
▪ Find ways to link Care Group members to cooperatives or other business opportunities. Encourage Leader Mothers and beneficiary mothers to join "silk" groups (CRS savings groups). ▪ Put pictures in Care Group curriculum flip-charts that show women working to model this norm.	▪ If possible, women should work for cash or gifts in kind.

Finding	Question / Information
10. Mothers of PD children were three times more likely to **encourage their non-hungry child to eat.**	What do you do when (NAME) does not want to eat or refuses to eat? The mother/caregiver encourage the child to eat (may include positive verbal cues, encouraging behavior, offering another food, or offering an incentive).
Additional Questions to Consider:	
▪ What do mothers do to encourage their children to eat? ▪ What are common threats mothers use to get their children to eat? Are these helpful? ▪ *Use games and songs, plays with the child.* ▪ *Frighten the child with a name of an animal, others beat the child, and say if they don't eat they will give the food away* ▪ *Many said you have to beat or threaten your children to eat or they just won't eat.* ▪ *Sometimes the children will not eat because the food is not to his/her liking.* ▪ *DR. D and Laban responded to the Promoters saying children need to be threatened and beaten by saying that doctors recommend (and research*	
Suggested Action	**Suggested Educational Messages**
▪ Use radio spots to transmit positive parenting messages, especially related to child feeding.	▪ Praising, speaking pleasantly and respectfully to your child, and showing him or her consistent love will make a child feel secure and happy and is the best way to change a child's behavior. ▪ All parents want their children to grow strong and healthy. Sometimes we just don't know how to get our children to do what is best for them. If your child refuses to eat, pretend that you are that child and think about what would encourage you to eat. Would scare tactics or threats motivate you, or would you rather be motivated by kind words and belief that you can do it?
Finding	**Question / Information**
11. The following foods were found to be associated with positive deviance: ➢ **Salt** ➢ **Taro** ➢ **Organ Meats**	▪ Salt & Taro Question: What did you feed to (NAME) yesterday during the day and night? Tell me everything that (NAME) ate and drank yesterday from the time he woke up in the morning yesterday until the time he work up in the morning today. ▪ Organ Meats Question: I want to ask you about all the foods (NAME) has eaten in the past week. I will read the name of a food, and I would like you to tell me how many days during this past week (NAME) ate that food. If he/she ate the food everyday, the answer would be 7 days.
Additional Questions to Consider:	
▪ Why do some mother's use salt to prepare their children's food and others not? *Some mothers add salt because they know the importance of* ▪ Why do you think salt would prevent malnutrition? *Salt constitutes one of the essential nutrients in the balanced diet.* ▪ Is the un-iodized salt from Tanzania commonly used in villages*? It is commonly used in the villages because the project communities are on the* ▪ Is it common for children to be given taro or organ meats to eat? *Yes* ▪ How can these foods be promoted? *Educate the population to grow taro and be involved in small animal raising (chicken), and to give children*	
Suggested Action	**Suggested Educational Messages**
▪ Include salt as an ingredient in recipes for small children promoted in Care Group curriculum, so women remember to put it in. ▪ Show pictures in the Care Group flipcharts of people using iodized salt and crossing out a picture of the non-iodized salt from Tanzania. ▪ Include taro and organ meats from small animals commonly consumed in Burundi in recipes. ▪ Investigate how mothers prepare taro for their children to eat through focus groups in order to gather ideas for recipe development.	▪ Children should be fed salt, taro, and organ meats. ▪ A good meal for children is taro mixed with beans or the small dried fish. ▪ Salt makes food tastes better. Add a little bit of iodized salt to your child's porridge to make it taste better. ▪ What children consume affects the quality of their growth. Taro and organ meats are good foods for children to eat. ▪ Taro is a good food for children but not served all by itself. Mothers can prepare meals with taro using recipes that they learn through Care Group meetings.
Finding	**Question / Information**
12. *Malnourished* children were four times more likely to have been **hit or spanked** in the past week.	Sometimes children behave pretty well and sometimes they do not. On how many days, if any, have you or another member of your household had to hit or spank your child in the past week? (0 vs. #)
Additional Questions to Consider:	
▪ What are the norms regarding child discipline? *They didn't understand the word discipline.* ▪ Do some parents abuse their children, spanking and hitting in excess? *Yes, spanking, beating excessively happens and this traumatizes the child.* ▪ Do some parents not practice enough child discipline and let their children misbehave? *Yes, they let them misbehave and this has negative* ▪ Do parents not pay enough attention to their children to discipline them? *Yes* ▪ Are malnourished children so sick they do not need spankings as compared to health children? *If a child does not eat properly it is not allowed*	

Suggested Action	Suggested Educational Messages
▪ Good to include some teaching about appropriate child discipline in flipcharts. ▪ In a focus group setting, investigate the topic of how parents get their children to do what they want them to do. What are the societal norms for how parents should interact with children? Are these effective at getting children to behave? What expectations do mothers have about their child's behavior? ▪ In a Care Group discussion about child feeding, explore what works and what doesn't work to get children to respond as mothers want them to.	▪ Use messages from how to encourage a non-hungry child to eat (above). ▪ All parents want their children to behave and contribute to society. Sometimes we just don't know how to get our children to do what we want them to do. If your child refuses to behave, pretend that you are that child and think about what would encourage you to act right. Would threats or being hit make you want to behave or would you rather be motivated by firm words and explained limits?
Finding	**Question / Information**
13. PD mothers were 4 times more likely to have a child who **defecated in a proper spot** at last defecation.	The last time (NAME) passed stool, where did he/she defecate? Used sanitation facility, Used a potty (indoor pot or pan), Used washable
Additional Questions to Consider:	
▪ What are common practices regarding child defecation? *In the rural household, the child defecates anywhere, because they don't have pots and* ▪ Does this change when children are taken to the market? *It's the same thing. If a child is on a woman's back and he has to defecate, she just* ▪ To neighbors homes*? (Same thing.)* ▪ Do people understand that child feces can carry disease and need to be properly disposed of? *"They know it causes diseases, but in ignorance*	
Suggested Action	**Suggested Educational Messages**
▪ In the Care Group module about diarrhea prevention and hygiene, include feces mapping (used in CLTS) to help people understand how much filth is around them and how each person has to do their part to clean up the community. ▪ Include teaching that emphasizes the severity of diarrhea and the behavior that causes diarrhea (not burying feces). ▪ In a Care Group meeting discuss how to practically keep your child from defecating just anywhere at home, at the market, when visiting, etc....	▪ The importance of burying or properly disposing of child feces to prevent the spread of disease. ▪ It matters where your child defecates. When your child's feces are on the open ground, they contaminate and make sick anything that comes in contact with it. ▪ Keep <name of community> clean. Dispose of your child's feces in <name of a promoted proper place>.
Finding	**Question / Information**
14. Mothers of *malnourished* children are four and a half times more likely to be currently breastfeeding compared to mothers of PD children	
Additional Questions to Consider:	
Since this study was done with children up to 5 years of age, it indicates that many mothers are continuing to breastfeed their children beyond 2 ▪ What is the normal weaning age? *24 months*. ▪ Do mothers continue breastfeeding because they realize the food they have for their children is not sufficient? *To some degree. Some mothers* ▪ What are normal weaning practices? *Exclusive BF until 4 months and then start supplementing*.	
Suggested Action	**Suggested Educational Messages**
▪ Include suggested educational messages in flipchart teaching. ▪ Use radio spots to communicate the Exclusive Breastfeeding until 6 months message to mothers, fathers, and community leaders.	▪ Make sure women understand that exclusive breastfeeding protects against pregnancy the most, and other breastfeeding (i.e.anything besides of exclusive) helps a little. ▪ Emphasize how complementary feeding fits into breastfeeding (include timing of introduction and feeding frequency as the child ages) ▪ Emphasize exclusive breastfeeding until 6 months – not 4! ▪ When you baby reaches 12 months, breastfeed after offering the meal or snack. ▪ After two years, a child's primary source of nutrition needs to come from food, not breastmilk. Breastmilk can complement the nutrition a child receives from solid and liquid food.
Finding	**Question / Information**
15. Mothers of PD children were three times more likely to **breastfeed within the first hour after birth**.	At how many hours after the birth of (NAME) did you begin breastfeeding? (counted if said < 2 hours)
Additional Questions to Consider:	
▪ What is normally done with a child after it is born? *If a child is born in a hospital BF is immediate. [Our BA study found that happens about 67%* ▪ Do people believe the yellow, first milk is good for a child? *Some believe it is good and others not, "because of ignorance." For those who believe* ▪ Is it common to give beer to a child to clean out its stomach? *There are mothers who, when the child is born, they give the child beer to avoid* ▪ What beliefs need to be overcome to convince people it is good to have the baby breastfeeding within the first hour after birth?	

Suggested Action	Suggested Educational Messages
▪ Communicate this in key "age appropriate messages" ▪ Have Leader Mother emphasize this in late pregnancy. ▪ Teach traditional birth attendants the importance of immediate breastfeeding and the benefit of the first milk. ▪ Teach the benefits to the mother of immediate breastfeeding (expelling the placenta, tightening of the uterus, stop bleeding, etc) in Care Group curriculum.	▪ State specifically that beer should not be given to infants and the problem with giving beer instead of colostrum. ▪ First milk is the best thing to give your newborn baby to help him/her avoid stomach troubles. ▪ Immediate breastfeeding after birth helps you to feel closer to your baby. It makes the placenta come out faster and bleeding to stop, and give the baby a chance to learn how to breastfeed before he's really hungry. ▪ Immediate breast feeding after birth will stimulate your body to produce all the milk your baby needs in its first days and months of life. ▪ The first, yellow milk is like a vitamin and vaccine and very good for the baby. It protects the newborn baby from disease and makes the baby strong.
Finding	**Question / Information**
16. 35% of PD children were ill with **any disease** in the past two weeks vs. 75% of malnourished children.	Has (NAME) suffered from any illnesses in the past two weeks? Yes or No
Additional Questions to Consider:	
▪ What do people believe makes children sick? *Microbes*. ▪ How do people prevent child sickness? *Practice hygiene*. ▪ When children are sick how are they treated? What foods or care is given to them? *See #17 for more info.*	
Suggested Action	**Suggested Educational Messages**
▪ Through the Care Group curriculum explain how lack of hygiene leads to illness. Explain how hygiene practices and protective practices break the illness cycle.	▪ It's up to you to protect your child from getting sick. Washing hands, sleeping beneath a mosquito net, eating good foods, and drinking clean water all work to protect your child from getting sick. ▪ Illness can cause children to become malnourished. It's important to invest time and money in preventing your child from becoming ill.
Finding	**Question / Information**
17. 17% of PD children were ill with **diarrhea** during the past two weeks vs. 52% malnourished children.	What illnesses did (NAME) have in the past two weeks?
Additional Questions to Consider:	
▪ What do people believe makes children have diarrhea? *Mother's milk or breast disease may cause the child diarrhea, so they may wean early. Or* ▪ How do people prevent diarrhea? *Some mother's give water from cooked rice, mixing of charcoal powder and palm oil. They stop giving child*	
Suggested Action	**Suggested Educational Messages**
▪ Diffuse untrue beliefs and taboos about the causes of diarrhea using radio spots. ▪ Discuss real and supposed causes of diarrhea and real and supposed treatments for diarrhea during Care Group discussions. (References were found regarding the use of charcoal powder to treat diarrhea, but no studies that proved it is effective. There is the danger of overdosing children and causing charcoal poisoning.)	▪ Breast milk cures and prevents diarrhea, it doesn't cause it. What a mother eats can affect her child through the breast milk. It takes an estimated four to six hours between the time a breast feeding mother eats a food and the time it affects her milk. If she can establish any relationship between certain foods that she is eating and reactions from her baby, she can avoid these foods. ▪ Baby teeth do not cause diarrhea. But when a child is teething, they will often put things into their mouths, including their hands, to touch their gums. Mothers need to try to keep dirty things out of a child's hands, especially hands that have not been washed after defecation. ▪ Proper home management of diarrhea (avoid water enemas!) using ORS solutions.
Finding	**Question / Information**
18. 4% of PD children were ill with **an illness other than diarrhea, ARI, fever or malaria** during the past two weeks vs. 19% of malnourished children	
Additional Questions to Consider:	
▪ What are the common childhood diseases other than diarrhea, flu, pneumonia, fever and malaria (according to mothers)? *TB, skin diseases,* ▪ What do people believe makes children have these other illnesses? *Lack of vaccination. Most have vaccination, but when the mother did not go* ▪ How do people prevent these diseases? *Tattooing, going to traditional healers or grandmothers. Others rely on trainings from health center and*	
Suggested Action	**Suggested Educational Messages**
▪ Discuss prevention of conjunctivitis through good handwashing practices in Care Group curriculum. ▪ Emphasize the importance of prenatal visits, explaining that it helps protect the health of the mother and the baby. ▪ Describe the types of illness that vaccinations can prevent during Care Group discussions.	▪ Importance of the timely vaccination of children in order to prevent illness. ▪ How can you prevent your child from getting sick? Through timely vaccination.

IV. Conclusions

- The Local Determinants of Malnutrition Study is an innovative, high-quality tool to help project staff assess food security vulnerabilities and predict and mitigate food security risks and shocks in vulnerable populations.

- Use of this tool with relatively small sample sizes can identify useful and heretofore undetected underlying determinants of malnutrition at the local level (in addition to the determinants that we already know about from the health and nutrition literature), which in turn can give a focused direction to program activities addressing food security issues.

- Project field staff can be successfully trained in using this tool and analyzing the results in order to plan better programs or make program changes to better address possible causes of malnutrition in their program areas.

- For questions on the LDM study or use of this tool, please contact:

Julie Hettinger, MS, RD
Maternal and Child Nutrition Specialist
Food for the Hungry - Washington, DC
jhettinger@fh.org

Condensed Matrix of Localized Determinants of Malnutrition (Related to Environment/Care)
Sorted by Total Score

Possible Determinant	Strength of Association	Feasibility of Measurement	Susceptibility to Change During Rehab	Susceptibility to Change Outside Rehab	Total Score
1. Family recognition of special nutritional needs of young child	+++++	+++++	+++++	+++++	20
2. Reported hygiene practices	+++++	+++++	+++++	+++++	20
3. Mother's support network	++++	++++	+++++	+++++	18
4. Observed hygiene practices	+++++	++	+++++	+++++	17
5. Promptness of response to child's hunger cues / priority given to child at mealtime	+++	+++	+++++	+++++	16
6. Worldview	+++++	+++++	+++	+++	16
7. Use of preventive health services (e.g. pre-natal care, immunization)	+++	+++++	+++	++++	15
8. Amount of separation of child from mother	+++	+++++	+++	+++	14
9. Child's cry / care seeking behavior	+++	+	+++++	+++++	14
10. Maternal literacy	+++++	+++++	+	+++	14
11. Mother's level of satisfaction with her life in general	++++	++++	+++	+++	14
12. Depression in the mother/caregivers	+++++	+++	+++	+++	14
13. Complication/stress during pregnancy	+++++	+++++	-	+++	13
14. Gender-specific care (i.e., gender of child)	+++++	+++++	-	+++	13
15. Listening to Radio programs on nutrition and child care	+++++	+++++	-	+++	13
16. Promptness in use of modern health services	++++	+++++	-	++++	13
17. Use of Insecticide Treated Bed Nets	+++++	+++++	++++	++++	13
18. Psychosocial stimulation / Mother Child Bonding.	+++++	+++	+	+++	12
19. Happiness w/marriage or partnership	++++	++++	+	+++	12

Possible Determinant	Strength of Association	Feasibility of Measurement	Susceptibility to Change During Rehab	Susceptibility to Change Outside Rehab	Total Score
20. Alcoholism	+++++	++++	-	+++	12
21. Does one or more of child's parents/ caregivers have a chronic illness?	++++	+++++	-	+++	12
22. Provision of financial support for child by father	++++	+++++	-	+++	12
23. Was child wanted?	+++	+++++	-	+++	11
24. Mother's income-generating work / Working outside the home	+++	+++++	-	+++	11
25. Water Source (e.g., type of source, distance to source, use of unprotected water sources)	+++	+++++	-	+++	11
26. Age/maturity of mother	+++	+++++	-	++	10
27. Domestic abuse	+++	++++	-	+++	10
28. Does child live with birth parents	+++	+++++	-	++	10
29. Mother's domestic work load / Number of children mother has to look after	++++	++	-	+++	9
30. Sanitary conditions of child's environment (e.g., where defecation happens, how feces are disposed of)	+++	+++++	-	+	9
31. Sleep problems in child	++	+++++	-	-	7
32. Parent/caregiver's ability to put child's needs first	+	+	-	-	2

Condensed Matrix of Localized Determinants of Malnutrition (Related to Environment/Care)
Sorted by Strength of Association

Possible Determinant	Strength of Association	Feasibility of Measurement	Susceptibility to Change During Rehab	Susceptibility to Change Outside Rehab	Total Score
+++++ Items					
1. Family recognition of special nutritional needs of young child	+++++	+++++	+++++	+++++	20
2. Reported hygiene practices.	+++++	+++++	+++++	+++++	20
3. Observed hygiene practices	+++++	++	+++++	+++++	17
4. Worldview	+++++	+++++	+++	+++	16
5. Maternal literacy	+++++	+++++	+	+++	14
6. Depression in the mother/caregivers	+++++	+++	+++	+++	14
7. Complication/stress during pregnancy	+++++	+++++	-	+++	13
8. Gender-specific care (i.e., gender of child)	+++++	+++++	-	+++	13
9. Listening to Radio programs on nutrition and child care	+++++	+++++	-	+++	13
10. Psychosocial stimulation / Mother Child Bonding.	+++++	+++	+	+++	12
11. Alcoholism	+++++	++++	-	+++	12
++++ Items					
12. Mother's support network	++++	++++	+++++	+++++	18
13. Mother's level of satisfaction with her life in general	++++	++++	+++	+++	14
14. Promptness in use of modern health services	++++	+++++	-	++++	13
15. Happiness w/marriage or partnership	++++	++++	+	+++	12
16. Does one or more of child's parents/ caregivers have a chronic illness?	++++	+++++	-	+++	12
17. Provision of financial support for child by father	++++	+++++	-	+++	12

Possible Determinant	Strength of Association	Feasibility of Measurement	Susceptibility to Change During Rehab	Susceptibility to Change Outside Rehab	Total Score
18. Mother's domestic work load / Number of children mother has to look after	++++	++	-	+++	9
+++ Items					
19. Promptness of response to child's hunger cues / priority given to child at mealtime	+++	+++	+++++	+++++	16
20. Use of preventive health services (e.g. pre-natal care, immunization)	+++	+++++ .	+++	++++	15
21. Amount of separation of child from mother	+++	+++++	+++	+++	14
22. Child's cry / care seeking behavior	+++	+	+++++	+++++	14
23. Was child wanted?	+++	+++++	-	+++	11
24. Mother's income-generating work / Working outside the home	+++	+++++	-	+++	11
25. Water Source (e.g., type of source, distance to source, use of unprotected water sources)	+++	+++++	-	+++	11
26. Age/maturity of mother	+++	+++++	-	++	10
27. Domestic abuse	+++	++++	-	+++	10
28. Does child live with birth parents	+++	+++++	-	++	10
29. Sanitary conditions of child's environment (e.g., where defecation happens, how feces are disposed of)	+++	+++++	-	+	9
++ Items					
30. Sleep problems in child	++	+++++	-	-	7
+ Items					
31. Ability to put child's needs first	+	+	-	-	2
32. Use of insecticide treated bed nets	?	+++++	++++	++++	13

Matrix of Possible Localized Determinants of Malnutrition (Related to Intake / Illness History)
(Sorted by Total Score)

Possible Determinant	Strength of Association[1] / Severity of Problem	Feasibility of Measurement	Susceptibility to Change[2]	Scope of Problem[3]	Total Score
1. Total calorie intake (child)	+++++	+++++	+++++	+++++	20
2. Vitamin A intake (child)	++++	+++++	+++++	+++++	19
3. Age at which supplementary food started	+++	+++++	+++++	+++++	18
4. Protein Intake / Animal protein consumption / Sulfur	+++++	+++++	+++	+++++	18
5. Fat intake (child)	+++++	+++++	+++++	+++?	18
6. Dietary diversity (number of food groups consumed)	+++++	+++++	+++	+++++	18
7. Mother's intake of calories during pregnancy or lactation	+++++	+++	+++++	+++++	18
8. Past history of diarrheal diseases	+++++	+++++	+++	+++++	18
9. History of soil transmitted helminths, parasites, and deworming	++++	++++	+++++	+++++	18
10. Iodine intake (child)	++++	+++++	++++	+++++	18
11. Birth weight	+++++	+++	++++	+++++	17
12. ast history of measles (child)	++++	+++++	+++	+++++	17
13. Past history of respiratory diseases (child)	++++	+++++	+++?	+++++	17
14. Iron intake (child)	++++	+++++	+++	+++++	17
15. Immediate breastfeeding / giving colostrum	+++	+++++	++++	+++++	17
16. Zinc intake (child)	+++++	+++	+++	+++++?	16

[1] In general, we will call an association of 0.1 to 0.3 as +++, and 0.3-0.5 ++++, above 0.5 as +++++. For changes in Z-score, we will call statistically significant associations with more than 0.5 SDs +++++.
[2] Possibility of affecting with an intervention within Title II
[3] Prevalence, geographical distribution

Possible Determinant	Strength of Association[1] / Severity of Problem	Feasibility of Measurement	Susceptibility to Change[2]	Scope of Problem[3]	Total Score
17. Exclusive breastfeeding	+++++	+++	+++	+++++	16
18. Complete BF at each feed (i.e., emptying the breasts)	+++++	+++++	++++	++?	16
19. Speed of weaning	+++++	++++	+++++	++?	16
20. hild's diet during illness	++++?	++++	++++	++++	16
21. Vitamin B12 intake (child)	++++	++++	+++	+++++	16
22. Past history of fever/malaria (child)	++++	+++++	++?	+++++	16
23. Polyphenols: coffee, tea, & cocoa *(iron uptake inhibitors)*	+++?	+++++	+++++	+++?	16
24. Magnesium intake (child)	+++?	+++++	+++++	++??	15
25. Lycopene, flavonoids, & flavonols intake (child)	+++	++++	+++++	+++?	15
26. umber of pregnancies, child spacing	+++	++++	+++	+++++	15
27. Potassium intake (child)	+++?	+++++	+++++	++??	15
28. aternal B1, B6 & B12 consumption during pregnancy or lactation	+++++	++	+++	++++	14
29. itamin A intake during pregnancy and lactation	+++++	++	++++	+++	14
30. ron intake during pregnancy and lactation	++++	++	+++	+++++	14
31. aternal consumption of fat during pregnancy and lactation	++++	+	++++	++++	13
32. Phytate to zinc (molar) ratio & Phytate / Fiber (child)	+++	++	++++	++++	13
33. Copper intake (child)	++??	++++	++++	+++?	13
34. other's intake of protein during pregnancy and	+++?	++	+++	++++	12

Possible Determinant	Strength of Association[1] / Severity of Problem	Feasibility of Measurement	Susceptibility to Change[2]	Scope of Problem[3]	Total Score
lactation					
35. Phosphorous intake (child)	++??	++++	++++	++??	12
36. Vitamin B2 (Riboflavin) intake (child)	- ?	++++	+++	++++	11
37. Mother's intake of zinc during pregnancy or lactation	++?	++	++	++++	10
38. Calcium intake (child)	+	++++	+++	++??	10
39. Vitamin E (Tocopherol) intake (child)	-	++++	++++	++?	10
40. Age breastfeeding terminated / Length of breastfeeding	-	+++++	+	++++	10
41. Vitamin C intake (child)	-	++++	++++	+?	9
42. Threonine, lysine, & methionine intake (child)	+?	-	++	++++?	8
43. Food taboos for child	+??	++	+++	++??	8
44. others dietary taboos	+??	++	+++	++??	8
45. Exposure to sunlight to generate Vitamin D (child)	-	++	++++	+?	8
46. aternal illness history	-	+++	+?	++?	6
47. Cooking methods and vitamin preservation	+?	-	+	+?	2

Matrix of Possible Localized Determinants of Malnutrition (Related to Intake / Illness History)
(Sorted by strength of association)

Possible Determinant	Strength of Association[4] / Severity of Problem	Feasibility of Measurement	Susceptibility to Change[5]	Scope of Problem[6]
1. Total calorie intake (child)	+++++	+++++	+++++	+++++
2. Protein intake / Animal protein consumption / Sulfur	+++++	+++++	+++	+++++
3. Zinc intake (child)	+++++	+++	+++	+++++?
4. Fat intake (child)	+++++	+++++	+++++	+++?
5. Exclusive breastfeeding	+++++	+++	+++	+++++
6. Complete BF at each feed (i.e., emptying the breasts)	+++++	+++++	++++	?
7. Dietary diversity (number of food groups consumed)	+++++	+++++	+++	+++++
8. Birth weight	+++++	+++	++++	+++++
9. Speed of weaning	+++++	++++	+++++	?
10. Mother's intake of calories during pregnancy or lactation	+++++	+++	+++++	+++++
11. Maternal B1, B6 & B12 consumption during pregnancy or lactation	+++++	++	+++	++++
12. Vitamin A intake during pregnancy and lactation	+++++	++	++++	+++
13. Past history of diarrheal diseases	+++++	+++++	+++	+++++
14. Child's diet during illness	++++?	++++	++++	++++
15. Vitamin A intake (child)	++++	+++++	+++++	+++++

[4] In general, we will call an association of 0.1 to 0.3 as +++, and 0.3-0.5 ++++, above 0.5 as +++++. For changes in Z-score, we will call statistically significant associations with more than 0.5 SDs +++++.
[5] Possibility of affecting with an intervention within Title II
[6] Prevalence, geographical distribution

Possible Determinant	Strength of Association[4] / Severity of Problem	Feasibility of Measurement	Susceptibility to Change[5]	Scope of Problem[6]
16. Vitamin B12 intake (child)	++++	++++	+++	+++++
17. Maternal consumption of fat during pregnancy and lactation	++++	+	++++	++++
18. Iron intake during pregnancy and lactation	++++	++	+++	+++++
19. Past history of measles (child)	++++	+++++	+++	+++++
20. Past history of fever/malaria (child)	++++	+++++	++?	++++++
21. Past history of respiratory diseases (child)	++++	+++++	+++?	+++++
22. History of soil transmitted helminths, other parasites, and deworming	++++	++++	+++++	+++++
23. Age at which supplementary food started	+++	+++++	+++++	+++++
24. Magnesium intake (child)	+++?	+++++	+++++	??
25. Polyphenols: coffee, tea, & cocoa (Iron uptake inhibitors.)	+++?	+++++	+++++	+++?
26. Mother's intake of protein during pregnancy and lactation	+++?	++	+++	++++
27. Phytate to zinc (molar) ratio & Phytate/Fiber (child)	+++	++	++++	++++
28. Lycopene, flavonoids, & flavonols intake (child)	+++	++++	+++++	+++?
29. Number of pregnancies, child spacing	+++	++++	+++	+++++
30. Mother's intake of zinc during pregnancy/lactation	++?	++	++	++++
31. Threonine, Lysine, & Methionine intake (child)	+?	-	++	++++?
32. Cooking methods and vitamin preservation	+?	-	+	?
33. Calcium intake (child)	+	++++	+++	??
34. Copper intake (child)	??	++++	++++	+++?
35. Phosphorous intake (child)	??	++++	++++	??
36. Food taboos for child	??	++	+++	??
37. Mothers dietary taboos	??	++	+++	??
38. Vitamin B2 (Riboflavin) intake (child)	- ?	++++	+++	++++

Possible Determinant	Strength of Association[4] / Severity of Problem	Feasibility of Measurement	Susceptibility to Change[5]	Scope of Problem[6]
39. Vitamin C intake (child)	-	++++	++++	+?
40. Vitamin E (Tocopherol) intake (child)	-	++++	++++	++?
41. Age breastfeeding terminated / Length of BF	-	+++++	+	++++
42. Exposure to sunlight to generate Vitamin D (child)	-	++	++++	+?
43. Maternal illness history	-	+++	?	?
44. Iodine intake (child)	++++	+++++	++++	+++++
45. Iron intake (child)	++++	+++++	+++	+++++
46. Potassium intake (child)	+++?	+++++	+++++	??
47. Immediate breastfeeding / giving colostrum	+++	+++++	++++	+++++

Annex B

FOOD FOR THE HUNGRY
Local Determinants of Malnutrition Positive Deviance Questionnaire

Interviewer: _____ Supervisor: _____

❑ **Mother/Caregiver gave Informed Consent** **Data Entry: _____**

Date of Interview:_____

(PUT SURVEY NUMBER AT TOP OF EACH PAGE)

Name of Child: _____

Birthdate of Child: _____

Age of Child in completed months: ____ months

Language spoken at home:
❑ **1. Kirundi** ❑ **2. Swahili** ❑ **3. French** ❑ **4. Other _____**

Child's gender: ❑ **1. Male** ❑ **2. Female**

Name of Mother/Caregiver: _____

Mother/Caregiver's Age: _____ years

Mother/Caregiver's relationship to child's father:
❑ **1. Father lives with Mother/Caregiver**
❑ **2. Father is dead**
❑ **3. Father is not known**
❑ **4. Father is known, but lives elsewhere**
❑ **5. Mother/Caregiver and father divorced**
❑ **6. Other**

Mother/Caregivers marital status:
❑ **1. Married to or living with one person** ❑ **2. Polygamous relationship**
❑ **3. Widowed** ❑ **4. Divorced** ❑ **5. Other (Specify:_____**

Household type: ❑**1. Child lives with nuclear family only** ❑**2. Child is orphan** ❑**3. Child lives with extended family**[7]

How many children born before this child: ____

How many children 0-59 months in house (including this one): ____

Child's Weight: ____.__ kg

PART I OF THE QUESTIONNAIRE

Mother's Income-generating work

1. In the last 12 months, have you done any work for which you got paid in cash or in kind?
   ❑ 1. Yes ❑ 2. No

2. Your roof is mostly made of what material?
   ❑ 1. Grass, palm fronds
   ❑ 2. Zinc/metal
   ❑ 3. Clay roof tiles
   ❑ 4. Other

[7] Living with extended family = Lives with one or more parents + one or more other relatives (not siblings)

I. Questions about Food & Feeding Practices

3. Have you ever breastfed (NAME)? ❑ 1. Yes ❑ 2. No → **if NO, skip to #14**

4. At how many hours after the birth of (NAME) did you begin breastfeeding?
   ____ hours after birth

5. Did you or anybody else give any other liquids or foods to (NAME) before breastfeeding for the first time?
   ❑ 1. Yes ❑ 2. No ❑ 3. Don't remember

6. Are you currently breastfeeding (NAME)? ❑ 1. Yes ❑ 2. No

6a. Are you or anybody else currently giving any other liquids or foods to (NAME)?
   ❑ 1. Yes ❑ 2. No ❑ 3. Don't know

7. When you breastfeed (or breastfed) (NAME), do you (or did you) usually completely empty your breasts?
   ❑ 1. Yes, usually / always ❑ 2. No, not usually / never

8. At how many months did you completely wean (NAME)? _____ months of age
   ❑ Still breastfeeding → **If still breastfeeding, Skip to #10**

9. Did you stop breastfeeding (wean) (NAME) little by little or all at once?
   ❑ 1. Little by little
   ❑ 2. All at once (= one week or less from complete breastfeeding to complete stoppage).
   ❑ 3. Still breastfeeding.

10. At what age (in months) did you first begin giving any liquids or food other than breastmilk to (NAME) [including water]? _____ months of age

11. When you were (or while you are) breastfeeding (NAME), did you usually eat (or do you usually eat) any of the following foods?
   (READ EACH FOOD IN EACH CATEGORY ONE-BY-ONE WAITING FOR A RESPONSE. MARK THE BOX BESIDE A CATEGORY IF THE MOTHER/CAREGIVER EATS ANY OF THE FOODS IN THAT CATEGORY.)

Yes	***No***	
❑	❑	a. Pumpkin, yellow sweet potato, carrots, greens (imboga, spinach, other dark leafy vegetables), papaya, beets, yellow squash, onion tops, red pepper, tomato paste, mango, broccoli, or red palm oil
❑	❑	b. Liver, kidney, [other organ meats including giblets], red palm oil, cod liver oil, tuna, Blueband margarine, butter, or cheese
❑	❑	c. Rice bran, sesame meal/seeds, sunflower seeds, cottonseed meal/flour, wheat germ, tahini, or sweet potato.
❑	❑	d. Rice or wheat bran, pistachio nuts, liver, garlic, or safflower seeds.
❑	❑	e. Organ meats[8], fish, red meat, or cheese
❑	❑	f. Red meat (beef, lamb, sheep, goat), organ meats, nuts, or cowpeas
❑	❑	g. Meat (beef, goat, sheep, pig, rabbit), poultry, fish (dried or fresh), eggs, beans, nuts, grasshoppers, flying ants, guinea pig, or bush rat.

[8] This includes chicken giblets and gizzards.

12. During the months when you were breastfeeding (NAME), did you take iron supplements given to you at the Health Center or pharmacy? For how many months did you take these iron supplements? ____ months

13. During the months when you were breastfeeding (NAME), did you regularly add more fat– oil, coton, lard, amavuta y'inka, or Blueband margarine – than you normally eat to *your own* meals?
❑ 1. Yes ❑ 2. No ❑ 3. Don't remember

14. When did you first give semi-solid or mashed food to (NAME)? _____ months of age

15. Has (NAME) ever been bottle-fed? ❑ 1. Yes ❑ 2. No ❑ 3. Don't remember

16. Is (NAME) currently being bottle-fed? ❑ 1. Yes ❑ 2. No

17. What did you feed to (NAME) yesterday during the day and night? Tell me everything that (NAME) ate and drank yesterday from the time he (or she) woke up in the morning yesterday to the time he (or she) woke up in the morning today. Be sure not to leave anything out.
WRITE DOWN ALL FOODS MENTIONED. USE MARGIN IF NECESSARY.
INCLUDE INGREDIENTS OF ANY "COMBINATION FOODS."
BE SPECIFIC (e.g. What kind of meat? What kind of milk? What kind of pulses?)

Time	Food	Ingredients

(ASK AFTER EACH FOOD, "Is there anything else?" PROBE FOR ANY ADDITIONAL FOODS AND INGREDIENTS.)

TELL THE MOTHER, "I am now going to ask about how many meals and how many snacks you usually feed (NAME)."

18. Apart from snacks, how many meals a day do you normally feed (NAME)? ____ meals

19. Apart from meals, how many snacks a day do you normally feed (NAME)? _____ snacks

20. How many times a day do you breastfeed (NAME) currently? ____ breastfeeds
❑ Too many to count

21. Does (NAME) usually eat from a plate shared with others (the common plate), or does he (or she) have his (or her) own plate?
❑ 1. Common plate
❑ 2. His or her own plate

22. Does (NAME) usually eat the same food as the rest of the family, or do you usually prepare food separately for (NAME)?
❑ 1. Same food as rest of family
❑ 2. Food is prepared separately for child

23. What do you do when (NAME) does not want to eat or refuses to eat?
- ❑ 1. The mother/caregiver encourages the child to eat (may include positive verbal cues, encouraging behavior, offering another food, or offering an incentive).
- ❑ 2. The mother/caregiver uses threats or other means to force the child to eat.
- ❑ 3. The mother/caregiver does something else.
  (SPECIFY:) _____
- ❑ 4. The mother/caregiver does nothing.

23b. Describe the consistency of the food that you feed (NAME).
- 1. Mother/caregiver describes a runny, watery texture.
- 2. Mother/caregiver describes a thick, mashed, or solid texture.
- 3. Mother/caregiver cannot describe the consistency of the food.

24. Do other people in the neighborhood ever feed (NAME)?
❑ 1. Yes ❑ 2. No ❑ 3. Don't know

25. I now want to ask you about all the foods (NAME) has eaten in the past week. I will read the name of a food, and I would like you to tell me on how many days during this past week (NAME) ate that food. If he/she ate the food everyday, the answer would be 7 days.

On how many days during the past week did (NAME) have…	**Number of Days the child ate this food:**
1. …pili pili?	
2. umusururu?	
3. white sweet potatoes?	
4. plantains?	
5. pumpkin?	
6. yellow sweet potato?	
7. carrots?	
8. tree tomatoes?	
9. greens (imboga, spinach, other dark leafy vegetables)?	
10. papaya?	
11. beets?	
12. yellow squash?	
13. onion tops?	
14. leeks?	
15. red peppers?	
16. tomato paste?	
17. mango?	
18. broccoli?	
19. liver?	
20. kidney?	
21. other organ meats including giblets, gizzards, and capons?	
22. red palm oil?	
23.	
24. canned fish?	
25. Blueband margarine?	
26. butter?	
27. cheese?	
28. oranges or mandarines?	
29. lemons?	
30. pineapple?	
31. any fat (oil, cotton, lard, amavuta y'inka, or Blueband margarine)?	
32. coffee?	
33. tea?	
34. passionfruit?	
35. molasses?	
36. white beans?	
37. cowpeas?	
38. kidney beans?	
39. other beans?	
40. lentils?	
41. rice?	
42. Irish potatoes?	
43. beef, lamb, sheep, goat, or other red meats?	
44. red berries?	
45. ground nuts or peanuts?	
46. custard apples?	
47. bee larva?	
48. cassava?	
49. cocoyam?	
50. yam?	
51. un-sprouted seeds?	
52. bran?	
53. un-roasted nuts?	
54. (any) fish?	
55. seeds (pumpkin, sunflower or other)?	
56.	
57. taro?	
58. amaranth?	
59. whole grains (wheat, oats, bulgur, barley, finger millet, sorghum)?	
60. maize or maize meal?	
61. cooked tomato products?	
62. guava?	
63. watermelon?	
64. tomatoes?	
65. onions?	
66. soy flour/meal?	
67. palm hearts?	
68. avocado?	
69. peas?	
70. mushrooms?	
71. coconut meat?	
72. wild fowl?	
73. guinea pig?	
74. goat cheese?	
75. flying ants?	
76. powdered or fresh milk?	
77. cabbage?	
78. soy beans?	
79. crickets?	
80. eggs?	
81. poultry?	
82. pork?	
83. yoghurt?	
84. beer or beer products?	
85. bush rat?	
86. grasshoppers?	
87. green aubergine?	

26. In your opinion what foods should never be given to a child?

❑ 1. Mother/caregiver mentions some foods that the child should never eat (taboos)
❑ 2. Mother/caregiver does not mention any foods that the child should never eat (taboos)

27. In your opinion, what foods should never be eaten by a woman when she is breastfeeding?

❑ 1. Mother mentions some foods that a lactating woman should never eat (taboos)
❑ 2. Mother does not mention any foods that a lactating woman should never eat (taboos)

(TELL THE MOTHER: "We will now talk about pregnancy and the time when you were pregnant with (NAME).")

28. In your opinion, what foods should never be eaten by a woman when she is pregnant?

❑ 1. Mother mentions some foods that a pregnant woman should never eat (taboos)
❑ 2. Mother does not mention any foods that a pregnant woman should never eat (taboos)

29. After the first few months of your pregnancy with (NAME), did you eat more than usual each day, less than usual, or the same as usual (in comparison to when you are not pregnant)?

❑ 1. more than usual ❑ 2. less than usual ❑ 3. the same as usual ❑ 4. don't know

30. During the months when you were pregnant with (NAME), did you take iron supplements given to you at the Health Center or pharmacy? For how many months did you take these iron supplements? ____ months

31. When you were pregnant with (NAME), did you regularly add fat – that is, oil, coton, lard, amavuta y'inka, or Blueband margarine – to your meals?

❑ 1. Yes ❑ 2. No ❑ 3. Don't remember

32. How large was (NAME) when he/she was born in comparison to other newborns/babies in the community: very small, somewhat smaller than average, average, somewhat larger than average, or very large? ***(Repeat categories.)***

❑ 1. Very Small ❑ 2. Smaller than Average ❑ 3. Average
❑ 4. Larger than Average ❑ 5. Very Large

II. Questions on Child Care Practices

33. How often do you take (NAME) with you when you go outside the home to cultivate your fields or go to market?

❑ 1. Always or almost always ❑ 2. Sometimes ❑ 3. Never/Almost never

34. At what age did you first leave (NAME) with someone else to take care of him/her?

_____ months ❑ Mother has never left child with someone else

34a. Who do you leave (NAME) with to take care of him/her?

❑ 1. Grandmother
❑ 2. Aunt
❑ 3. Child's sibling
❑ 4. Other relative
❑ 5. Neighbor who is older woman

❑ 6. Neighbor who is young girl
❑ 7. Other
❑ 8. Mother/Caregiver never leaves child with other caretakers

35. For how many hours of the day are you usually away from (NAME) most days?
_____ hours (Use 0 if never or hardly ever away)

36. If you leave (NAME) with other caretakers, what advice do you usually give them?
❑ 1. Mother/Caregiver mentions feeding advice
❑ 2. Mother/Caregiver does not mention feeding advice
❑ 3. Mother/Caregiver never leaves child with other caretakers

37. When you leave (NAME) with other caretakers, do you usually leave them food to give to the child?
❑ 1. Yes ❑ 2. No ❑ 3. Sometimes ❑ 4. Mother never leaves child with others.

III. Questions on Healthcare Seeking Behavior and Home Management of Sick Children

38. Has (NAME) suffered from any illnesses in the past two weeks?

❑ 1. Yes ❑ 2. No → ***if NO, go to #40***

39. What illnesses did (NAME) have in the past two weeks?
(Check off each that is mentioned.)
❑ a. Diarrhea
❑ b. Cold / Cough / Pneumonia / Rapid breathing
❑ c. Fever / Malaria
❑ d. Other illness (SPECIFY:) _____

40. Has (NAME) had measles in the past year?
❑ 1. Yes ❑ 2. No ❑ 3. Don't know

41. The last time that (NAME) had an illness, did you seek advice or help or treatment from anyone? ❑ 1.Yes ❑ 2.No ❑ 3.Child never sick → ***if NO or Never Sick, skip to #44***

42. How long after you noticed (NAME's) illness did you seek treatment?
❑ 1. Same day or next day ❑ 2. Two or more days later

43. Where did you first seek advice or help for (NAME) when he had an illness?
❑ 1. Trained health worker (Promoter, Nurse, Doctor, etc.)
❑ 2. Untrained person (traditional healer, family member, pharmacy worker, etc.)

44. The last time that (NAME) was sick, did you give (NAME) less food, the same amount of food, or more food than usual?
❑ 1. LESS food ❑ 2. SAME amount of food ❑ 3. MORE food

❑ 4. Never Sick

45. Do you have any bed nets in your house? ❑ Yes ❑ No → ***if NO Skip to #48***

46. Who slept under a bed net last night?
❑ 1. Child (NAME) ❑ 2. Other (Specify):_____

47. Was the bed net ever soaked or dipped in a liquid to repel the mosquitoes or bugs?
❑ 1. Yes ❑ 2. No ❑ 3. Don't know

48. Has (NAME) been dewormed in the past six months?
❑ 1. Yes ❑ 2. No ❑ 3. Don't know

49. Is the salt that you use in (NAME)'s food iodized[9] or not iodized?
❑ 1. Iodized ❑ 2. Not iodized ❑ 3. Don't know

IV. World View[10]

50. Why do you think some children are skinnier and shorter than other children?
❑ 1. The mother/caregiver says that neighbors or other persons can make her child become malnourished, or mentions other "magic" causes.
❑ 2. The mother/caregiver mentions the will of God or other spiritual/religious reasons
❑ 3. The mother/caregiver does NOT mention neighbors or other person, magic causes, or spiritual/religious causes for why children become malnourished.

51. Can a neighbor or another person in your community make a child lose weight by something that they do (e.g., curses, evil eye)?
❑ 1. Yes ❑ 2. No ❑ 3. Don't know

52. How serious do you think it is if a child is malnourished?
❑ 1. Not serious (It won't hurt the child) ❑ 2. A little serious (Child could get sick)
❑ 3. Serious (Child will certainly get sick) ❑ 4. Very serious (Child could die)

PART II OF THE QUESTIONNAIRE

V. Psychosocial & Other Environmental Factors

Mother/caregiver's Acceptance of (and Responsiveness to) Child

53. Over the past month, would you say that (NAME) pleased you very much, pleased you somewhat, frustrated you somewhat, or frustrated you a lot?
❑ 1. Please me very much
❑ 2. Pleased me somewhat
❑ 3. Frustrated me somewhat
❑ 4. Frustrated me a lot
❑ 5. Unsure how to answer

54. Sometimes children behave pretty well and sometimes they do not. On how many days, if any, have you or another member of your household had to hit or spank your child in the past week? ____ days.

55. At the time that you became pregnant with (NAME), did you want to become pregnant then, did you want to become pregnant later, or did you not want to have any/more children at all?
❑ 1. Wanted to become pregnant then

[9] Substitute for this question a question looking for a particular brand name of iodized salt, or otherwise reword to assure mothers are identifying iodized salt correctly. If an iodine test kit is available, have mothers bring salt or do the survey door-to-door, and test the salt for iodine.

[10] Be sure to do qualitative research with mothers about why children do not grow or become malnourished, and take that wording into account when developing questions for this section. For example, in Malawi, WR found that mothers said that children did not grow when their "spirits were sat upon".

- ❑ 2. Wanted to become pregnant later
- ❑ 3. Did not want to have any/more children at all

Mother/Caregiver's Support Network

Only ask the following question if the mother is in a polygamous relationship, otherwise skip to question #58

56. How many other wives does your husband have? _____ other wives

57. What wife number are you?

❑ 1. First ❑ 2. Second ❑ 3. Other (Specify): _____

58. Over the past month did (NAME'S) father contribute money to support (NAME), such as paying for food or clothing?
❑ 1. Yes ❑ 2. No

59. Do any of your female adult relatives live in the same house or compound with you?
❑ 1. Yes ❑ 2. No

60. How often do you usually visit or talk with a friend or family member who lives outside of your household? ***(Read responses below if necessary.)***
- ❑ 1. Several times a day
- ❑ 2. Several times a week
- ❑ 3. Several times a month
- ❑ 4. Several times a year
- ❑ 5. Less than once a year / never

61. If you needed help or had a problem, is there someone from your family of origin who lives close by[11] whom you could count on to <u>let you stay with them for a few nights</u>?
❑ 1. Yes ❑ 2. No ❑ 3. Don't Know

62. If you needed help or had a problem, is there someone from your family of origin who lives close by whom you could count on for <u>financial help</u>?
❑ 1. Yes ❑ 2. No ❑ 3. Don't Know

63. During the past three months, how many times have you taken (NAME) to community health activities where a health promoter or doctor was present talking about prevention of diseases (e.g., immunization posts, child weighing posts)? ____ times

64. Think back over the past 12 months. Has anyone in your household, including yourself, been very sick or bedridden for a period of more than three months (including anybody who has since died)?
❑ 1. Yes ❑ 2. No <u>If "Yes"</u> how many people? _____ ***→ If NO, skip to #66***

65. How old was/were the people who were sick for three months or more, or who died?
- ❑ 1. People are mentioned who WERE ILL between the ages of 15 and 49 (productive age) but did not die.
- ❑ 2. People are mentioned who WERE ILL AND HAVE DIED between the ages of 15 and 49 (productive age)

[11] Who you could visit and return in one day.

❑ 3. People mentioned are NOT between the ages of 15 and 49 (productive age).

Mother/Caregiver's Relationship with Husband/Partner

66. How satisfied are you with your relationship with your husband/partner? ***(Read responses below if necessary.)***
    - ❑ 1. Not at all / dissatisfied
    - ❑ 2. Somewhat satisfied (a little bit)
    - ❑ 3. Mostly satisfied
    - ❑ 4. Completely satisfied.
    - ❑ 5. Not married / does not live with partner

67. On how many days out of a week does your husband/partner usually quarrel (dispute or fight) with you or with your children?
    - ❑ 1. None (usually) / Never
    - ❑ 2. One or two days a week
    - ❑ 3. Three to five days a week
    - ❑ 4. Six or more days per week
    - ❑ 5. Not married / does not live with partner.

68. Husband/Wife relations **(Check Yes, No, or Don't Know for each in accordance with what the caregiver says.)**			
(SAY:) Sometimes a husband is annoyed or angered by things which his wife does.	**YES**	**NO**	**Don't Know**
a. In your opinion, is a husband justified in hitting or beating his wife/partner if she goes out to do something without telling him?			
b. In your opinion, is a husband justified in hitting or beating his wife/partner if she neglects the children?			
c. In your opinion, is a husband justified in hitting or beating his wife/partner if she argues with him?			
d. In your opinion, is a husband justified in hitting or beating his wife/partner if she refuses to sleep with / have sex with him?			
e. In your opinion, is a husband justified in hitting or beating his wife/partner If she burns the food?			
f. In your opinion, is a husband justified in hitting or beating his wife/partner if he is jealous?			
g. In your opinion, is a husband justified in hitting or beating his wife/partner for any other reason? (If she says yes:) What reason? (Specify):			
Total			

69. Do you feel that anyone in your family should cut down on their drinking of alcohol?
    ❑ 1. Yes ❑ 2. No ❑ 3. Cannot say

Mother/caregiver Self-report of Depressive Symptoms

70. The following statements describe how people sometimes feel about themselves. For each question, please indicate how often you have felt this way during the past week. (*Circle number of best answer for each statement.)*

Circle the appropriate cell after reading the question below	Rarely or none of the time (0 days a week)	Some or a little of the time (1-2 days a week)	Occasionally or a moderate amount of time (3-4 days a week)	Most or all of the time (5-7 days a week)	Score (Put numbered circled here)
a. Over the past week, on how many days did you feel sad?	**1**	**2**	**3**	**4**	
b. Over the past week, on how many days did you feel lonely?	**1**	**2**	**3**	**4**	
c. Over the past week, on how many days did you have crying spells?	**1**	**2**	**3**	**4**	
d. Over the past week, on how many days would you say you enjoyed life?	**4**	**3**	**2**	**1**	
e. Over the past week, on how many days would you say you felt depressed?	**1**	**2**	**3**	**4**	
f. Over the past week, on how many days would you say you felt little interest or pleasure in doing things?	**1**	**2**	**3**	**4**	
				Total Score:	

Hygiene Practices Taught to Child

71. What hygiene practices do you normally teach (NAME)?
(MARK ALL THAT APPLY. ASK, "Anything else?" AFTER EACH RESPONSE.)

- ❑ a. Wash hands with soap (or ashes) before eating
- ❑ b. Wash hands with soap (or ashes) after defecating
- ❑ c. Defecate in a latrine or potty
- ❑ d. Don't put hands in drinking water containers
- ❑ e. Use receptacle reserved for retrieving water to remove drinking water
- ❑ f. Only drink clean water (don't drink from streams/puddles etc.)
- ❑ g. Keep flies away from food.
- ❑ h. Keep away from animal feces.
- ❑ i. Keep away from animals.
- ❑ j. Keep away from human feces.
- ❑ k. Wash fruits and vegetables before eating them.
- ❑ l. Avoid food that has touched the ground
- ❑ m. Avoid food that has been touched by animals or birds.
- ❑ n. Other: (Specify): _____
- ❑ o. Don't Know
- ❑ p. None

Handwashing

72. Have you used soap or ashes today or yesterday for cleaning or washing? If so, what did you use it for?
    - ❑ 1. Care giver mentions soap or ashes for hand washing.
    - ❑ 2. Care giver does not mention soap or ashes for hand washing. → ***Skip to #74***

73. When did you wash your hands with soap or ashes?
    (MARK ALL THAT APPLY. ASK, "Any other time?" AFTER EACH RESPONSE.)
    - ❑ a. When bathing
    - ❑ b. Before preparing food
    - ❑ c. After defecating
    - ❑ d. Before feeding children or breastfeeding
    - ❑ e. After attending to a child who has defecated
    - ❑ f. Other (Specify: _____)

Disposal of child's feces

74. The last time (NAME) passed stool, where did he/she defecate? ***(Mark only one response.)***
    - ❑ 1. Used sanitation facility (e.g., latrine, flush toilet)
    - ❑ 2. Used potty (indoor pot or pan)
    - ❑ 3. Used washable diapers
    - ❑ 4. Used disposable diapers
    - ❑ 5. Went in house/yard
    - ❑ 6. Went outside the premises
    - ❑ 7. Went in his/her cloths
    - ❑ 8. Other (Specify): _____
    - ❑ 9. Don't know

Drinking Water

75. Do you usually store water for drinking in the household?
    - ❑ 1. Yes
    - ❑ 2. No → ***If NO, fill in response 4 for #76 and skip to #77***
    - ❑ 3. Don't know → ***If NO, fill in response 4 for #76 and skip to #77***

76. How many containers do you store water in? How many of the containers used in your home for drinking water are usually covered?
    - ❑ 1. All are
    - ❑ 2. Some are
    - ❑ 3. None are
    - ❑ 4. *Water not stored in household*

77. In the past week, did you do anything to the water given to (NAME) to make it safer to drink? If so, what?
    (MARK ALL THAT APPLY. ASK, "Anything else?" AFTER EACH RESPONSE.)
    - ❑ a. Did nothing / did not treat
    - ❑ b. Boil
    - ❑ c. Add bleach/chlorine
    - ❑ d. Sieve it through cloth
    - ❑ e. Water filter (ceramic, sand, composite)

- ❑ f. Solar disinfection
- ❑ g. Sedimentation
- ❑ h. Other (Specify):_____

Food Management Practices

78. Can you tell me how you keep food safe to eat?
(MARK ALL THAT APPLY. ASK, "Anything else?" AFTER EACH RESPONSE.)
    - ❑ a. Wash hands before preparation
    - ❑ b. Wash hands before eating
    - ❑ c. Wash utensils and containers before preparation
    - ❑ d. Wash food thoroughly
    - ❑ e. Cook food thoroughly
    - ❑ f. Consume all food at once
    - ❑ g. Avoid keeping leftovers
    - ❑ h. Reheat leftovers well before eating
    - ❑ i. Cover food containers
    - ❑ j. Prevent flies from touching the food
    - ❑ k. Keep food in cold place
    - ❑ l. Keep food behind doors or screen
    - ❑ m. Use clean utensils for retrieving food
    - ❑ n. Other (specify): _____
    - ❑ Z. Don't know

THANK THE MOTHER/CAREGIVER FOR HIS/HER TIME!

Annex C

FOOD FOR THE HUNGRY
Questionnaire sur les déterminants locaux de la déviance positive de la malnutrition

Enquêteur: _____ Superviseur: _____

☐ **La mère/La personne en charge a bien avisé son consentement**

Enregistrement des données _____

Date d'interview: _____

(*MENTIONNEZ LE NUMERO D'ENQUETE EN HAUT DE CHAQUE PAGE*)

Réservé seulement à la personne qui fait le tri:
Complétez la boîte de droite →

Nom de l'Enfant: _____

Date de Naissance de l'Enfant: _____
Age de l'enfant en mois complet :……mois
Groupe de Langues de l'Enfant
☐1. Kirundi ☐ 2. Swahili ☐ 3. Français ☐4.Autre : _____

Sexe de l'Enfant: ☐ 1. Masculin ☐ 2. Féminin

Nom de la Mère/Personne en Charge: _____

Age de la Mère/Personne en charge: _____ ans

Relation entre la Mère/Personne en charge de l'Enfant et son Père:
☐ 1. Le Père vit avec la Mère/Personne en charge ☐ 4. Le Père est connu, mais vit ailleurs
☐ 2. Le Père est mort ☐ 5. La Mère/Personne en charge et son Père ont divorcé
☐ 3. Le Père n'est pas connu ☐ 6. Autre

Etat-Civil de la Mère/Personnes en charge:
☐ 1. Mariée ou vivant avec une personne
☐ 2. Relation polygame ☐ 3. Veuve ☐ 4. Divorcée ☐ 5.Autre spécifiez : _____
Type de ménage: ☐ 1. L'enfant ne vit qu'en famille restreinte ☐ 2. L'enfant est orphelin
☐ 3. L'enfant vit en famille élargie[12]
Combien d'enfants sont nés avant cet enfant: ___
Combien d'enfants 0 – 59 mois dans la maison (y compris celui-ci): ___

☐ Poids de l'Enfant .____ :____kg

[12] Vivre en famille élargie c'est vivre avec un ou plus d'un parent et un ou plus d'un autre membre de famille (pas ses frères et sœurs)

I[ère] PARTIE DU QUESTIONNAIRE

L'activité génératrice de revenu de la mère

1. *Dans les 12 derniers mois, avez-vous eu du travail pour lequel vous avez été payée cash ou en nature?*
   Mu mezi 12 aheze, mwoba mwarakoze akazi mwahembewe amahera canke ibindi bintu atari amahera?
   □ 1.Oui □ 2.Non

2. *De quel matériel le toit de votre maison est principalement fait?*
   Inzu yawe isakajwe iki?
   □ 1. En paille, en feuilles de palme
   □ 2. En zinc/métal
   □ 3. En tuile de terre cuite
   □ 4. Autre

I. **Questions en rapport avec les pratiques alimentaires et de nourrissage**

3. *Avez-vous déjà allaité (DONNEZ LE NOM)?* □ 1.Oui □ 2.Non → **si,NON, sauter au #14**
   Mwoba mumaze kwonsa (TANGA IZINA)?

4. *Après combien d'heures après la naissance de (DONNEZ LE NOM) avez-vous commencé à allaiter pour la première fois?*
   Mwoba mwatanguye kwonsa (TANGA IZINA) ubwa mbere haciye amasaha angahe?
   _____ heures après la naissance

5. *Avez-vous (ou quelqu'une d'autre) donné d'autres liquides ou aliments à (DONNEZ LE NOM) avant le premier allaitement?*
   Mwoba mwarahaye (canke uwundi) (TANGA IZINA) ibindi binyobwa canke ibifungurwa imbere yuko mumwonsa ubwa mbere?
   □ 1. Oui □ 2. Non

6. *Est-ce que vous allaitez pour le moment (DONNEZ LE NOM)?* □ 1. Oui □ 2. Non
   Uraconsa (TANGA IZINA) ?

6a. *Est-ce que vous donnez (ou quelqu'une d'autre) pour le moment d'autres liquides ou aliments à (DONNEZ LE NOM).*
   Mwoba (canke uwundi muntu) muha ibindi binyobwa canke ibifungurwa (TANGA IZINA)
   □ 1. Oui □ 2. Non □ 3. Ne sais pas

7. *Lorsque vous allaitez (ou allaitiez) (DONNEZ LE NOM), vous videz (vidiez) complètement les seins?*
   Igihe mwonsa (TANGA IZINA) muronsa (mwaronsa) kugeza aho amaberebere ahera?
   □ 1. Oui, d'habitude/toujours □ 2. Non, pas d'habitude/jamais

8. Après combien de mois avez-vous sevré (DONNEZ LE NOM)? ____ mois d'âge
   Mwahagaritse kwonsa (TANGA IZINA) hashize amezi angahe? amezi _____
   □ Je continue à allaiter → **Si l'allaitement continue, sautez au # 10**

9. Avez-vous arrêté d'allaiter (sevré) (DONNEZ LE NOM) progressivement ou immédiatement?
   Igihe mwakura (TANGA IZINA) kw'ibere, mwoba mwahagaritse kwonsa buhorobuhoro canke bukwi na bukwi?

□ 1. Progressivement

□ 2. Immédiatement

10. A quel âge (en mois) avez-vous commencé à donner des liquides ou des aliments autres que le lait maternel à (DONNEZ LE NOM) (y compris l'eau)? _____ mois d'âge
Mwatanguye guha umwana (TANGA IZINA) ibindi binyobwa (harimwo n'amazi) canke ibifungurwa atari amaberebere ya nyina? amezi y'amavuka _____

11. Lorsque vous allaitiez (allaitez) (DONNEZ LE NOM), vous mangiez (mangez) d'habitude quelques aliments des suivants?
Igihe mwonsa (TANGA IZINA), mwari musanzwe mufungura zimwe mu ndya zikurikira?
(LISEZ CHAQUE ALIMENT UN A UN DANS CHAQUE CATEGORIE PUIS ATTENDEZ LA REPONSE. MARQUEZ DANS LA CASE A COTE DE LA CATEGORIE LORSQUE LA MERE/PERSONNE EN CHARGE MANGE QUELQUES ALIMENTS DE CETTE CATEGORIE)

Oui	***Non***	
□	□	a. Courge, patate douce jaune, carotte, légumes verts (épinard et autres légumes à feuilles vertes foncées), papaye, betterave potagère, citronnade, feuilles d'oignons, poivron rouge, purée de tomates, mangue, brocoli (chou-fleur vert) ou huile rouge de palme Umwungu, ibijumbu vy'umuhondo, ikaroti, imboga (ipinari, n'izindi mboga z'amababi atotahaye), ipapayo, amazi y'indimu, amababi y'ibitunguru, itomate ziseye, umwembe, amashu, amamesa
□	□	b. Foie, rognon, [autre viande d'organes y compris abats et/ou volailles], huile rouge de palme, huile de foie de morue, thon, margarine Blueband, beurre, ou foromage. Igitigu, ifyigo [izindi nyama z'ibihimba bizwi harimwo n'ivy'ibiguruka], amamesa, amavuta yo mu gitigu c'ifi, ifi, amavuta y'ibitegwa (Blueband), amavuta y'inka, canke iforomaje
□	□	c. Son de riz, graines de sésame, graines de tournesol, graines/farine de coton, ou patate douce. Umuguruka w'umuceri, imbuto za sesame, imbuto za tournesol, imbuto/ifu ya koto canke ibijumbu
□	□	d. Son de riz ou de blé, noix de pistache, foie, ail, safflower seeds Umuguruka w'umuceri, umuse, igitigu, ikirungo,
□	□	e. viande d'organes[13], poisson, viande rouge, ou fromage. Inyama zigizwe n'ibihimba vy'ibikoko (igitigu, ifyigo, n'ibindi harimwo n'ivy'ibiguruka, ifi, inyama z'imisoso, canke iforomaje.
□	□	f. viande (de bœuf, agneau, mouton, chèvre), viande d'organes, noix, ou petit pois. Inyama (z'inka, umwagazi w'intama, intama, impene), inyama zigizwe n'ibihimba vy'ibikoko, imise, canke ubushaza
□	□	g. viande (de boeuf, chèvre, mouton, porc, lapin), volaille, poisson, (grillé ou frais), œufs, haricots, noix, sauterelles, termites volantes, cobaye, ou rat sauvage. Inyama (y'inka, impene, intama, ingurube, urukwavu), inkoko n'izindi nyoni zitungwa, ifi, (iyize canke mbisi), amagi, ibiharage, imise, ibihori, inswa, imbeba z'ikizungu, imbeba zo mw'ishamba.

[13] y compris les abats de volaille

12. Pendant les mois d'allaitement de (DONNEZ LE NOM), avez-vous pris les suppléments de fer qui vous étaient donné au Centre de Santé ou à la Pharmacie? Pendant combien de mois les avez-vous pris? _____ mois
Igihe mwonsa (TANGA IZINA), mwoba mwarafashe ivyunyunyu vy'icuma mubihawe kw'ivuriro canke ku kaguriro k'imiti (pharmacie)? Mwabinyoye amezi angahe? amezi _____

13. Pendant les mois d'allaitement de (DONNEZ LE NOM), vous mettiez plus d'huile de coton, de saindoux, de beurre ou de margarine Blueband que normal dans votre nourriture?
Mu mezi mwahora mwonsa (TANGA IZINA), mwama mwongereje amavuta y'amakoto, y'ingurube, y'inka canke Blueband mu ndya zanyu kuruta uko bisanzwe?
□ 1. Oui □ 2. Non □ 3. Je ne me souviens pas

14. Quand est-ce que vous avez donné, pour la première fois, des aliments semi-solides ou écrasés à (DONNEZ LE NOM)? _____ mois d'âge
Hari ryari igihe mwatangura guha (TANGA IZINA) indya zoroshe canke ziseye? amezi ____ y'amavuka

15. Est-ce que (DONNEZ LE NOM) a déjà été nourri au biberon?
(TANGA IZINA) yoba amaze kugaburirwa hakoreshejwe icupa (biberon)?
□ 1. Oui □ 2. Non □ 3. Je ne me souviens pas

16. Est-ce que (DONNEZ LE NOM) est à présent biberonné(e)?
Ubu ho (TANGA IZINA) yoba agaburirwa hakoreshejwe icupa (biberon)?
□ 1. Oui □ 2. Non

17. Qu'est-ce que vous avez donné à (DONNEZ LE NOM) comme nourriture hier pendant la journée et la nuit? Dites-moi tout ce que (DONNEZ LE NOM) a mangé et bu dès son réveil hier le matin jusqu'à son réveil aujourd'hui le matin. Essayez de ne rien oublier.
(TANGA IZINA) mwamuhaye ingaburo izihe ejo ku murango no mw'ijoro? Mbwira imfungurwa n'ibinyobwa vyose mwahaye (TANGA IZINA) kuva mu gitondo c'ejo avyutse gushika mu gitondo c'uyu musi avyutse? Gerageza ntihagire ico mwibagira.
ECRIVEZ TOUTES LES NOURRITURES MENTIONEES. UTILISEZ UNE MARGE SI NECESSAIRE. INCLUEZ LES INGREDIENTS POUR CHAQUE COMBINAISON D'ALIMENTS. SOYEZ SPECIFIQUE (ex: Quel type de viande? Quelle sorte de lait? Quelle sorte de légumineuse?)

Time	Nourriture	Ingrédients

Demande après chaque aliment « N'y a il rien d'autre ? »Sonde d'autres aliments et ingrédients supplémentaires.
Dis à la maman,Je vais vous demander : « maintenant combien de repas et combien de casse-croutes vous donnez normalement ? »
Baza umuvyeyi : « Ngira rero ndakubaze musanzwe mumuha utuntu dutoduto hamwe n'ingaburo nkurunkuru kangahe ? »

18. A part le casse-croûte, combien de repas par jour vous donnez à (DONNEZ LE NOM)? _____ repas
Uretse utuntu dutoduto aza ararya, (TANGA IZINA) mumugaburira ingaburo nkurunkuru incuro zingahe ku musi? Incuro _____

19. A part les repas, combien de fois vous donnez du casse-croûte à (DONNEZ LE NOM) par jour?
_____ repas légers.
Uretse ingaburo nkurunkuru, mugaburira (TANGA IZINA) utuntu dutoduto incuro zingahe ku musi?
incuro _____

20. Combien de fois par jour vous allaitez (DONNEZ LE NOM) pour le moment?
Muri iki gihe (ubu) mwonsa incuro zingahe ku musi?
_____ allaitements □ trop nombreux que je ne peux pas compter

21. Est-ce que d'habitude (DONNEZ LE NOM) mange sur la même assiette avec les autres? (l'assiette commune) ou bien il (elle) mange sur sa propre assiette?
(TANGA IZINA) arasangira n'abandi n'abandi kw'isahani imwe (isahani ya benshi) canke arisangiza kw'isahani ya wenyene?
□ 1. Assiette commune □ 2. Sa propre assiette

22. Est-ce que (DONNEZ LE NOM) mange la même nourriture que le reste de la famille? Ou bien vous lui préparez la nourriture séparément des autres?
Mbe (TANGA IZINA) afungura indya abandi bose bafungura canke muramutegurira iziwe ukwiwe?
□ 1. La même nourriture que le reste de la famille
□ 2. La nourriture est préparée séparément pour l'enfant.

23. Que fais-tu lorsque (DONNEZ LE NOM) ne veut pas ou refuse de manger?
Mubigenza gute iyo (TANGA IZINA) adashaka canke yanse gufungura?
□ 1. La mère/personne en charge encourage l'enfant pour qu'il(elle) mange (en lui adressant des mots positifs, par des gestes/attitudes incitatives, en lui proposant une autre nourriture ou en lui promettant un cadeau)
□ 2. La mère/personne en charge utilise des menaces ou d'autres moyens pour forcer l'enfant de manger
□ 3. La mère/personne en charge intervient autrement (SPECIFIEZ) _____
□ 4. La mère/personne en charge ne fait rien

23b. Décrivez la consistance de la nourriture que vous donnez à (DONNEZ LE NOM)
Sigura ingene imfungurwa ugaburira (TANGA IZINA) zimeze mu buryo bwo kuguma canke kworoha
□ 1. La mère décrit la nourriture comme ayant une consistance liquide ou pâteuse.
□ 2. La mère décrit la nourriture comme ayant une consistance dure, écrasée ou solide
□ 3. La mère ne parvient pas à décrire la consistance de la nourriture.

24. Est-ce que d'autres gens dans l'entourage donnent de la nourriture à (DONNEZ LE NOM)?
Abandi bantu b'ababanyi boba bagaburira (TANGA IZINA)?
□1.Oui □2.Non □ 3.Ne sait pas

25. Maintenant je veux vous demander les nourritures que (DONNEZ LE NOM) a mangées la semaine passée. Je vais lire un nom de la nourriture, et je voudrais que vous me disiez pendant combien de jours de la semaine passée (DONNEZ LE NOM) a mangé cette nourriture. Si il(elle) a mangé la nourriture tous les jours, la réponse sera 7 jours.
Ubu ngira ndababaze imfungurwa (TANGA IZINA) yafunguye mu ndwi iheze. Ndasoma izina ry'imfungurwa, hanyuma murambwira igitigiri c'imisi yo mu ndwi iheze (TANGA IZINA) yariye izo mfungurwa. Nimba yariye iyo mfungurwa imisi yose y'indwi, inyishu izoba ari 7.

Pendant combien de jours de la semaine passée (DONNEZ LE NOM) a pris	**Nombre de jours pendant lesquels l'enfant a mangé:**
1. …pili pili?(ipilipili)	
2. umusururu?	
3. patates douces blanches?(ibijumbu vyera)	
4. plantains? (ibisahira)	
5. Les courge? (imyungu)	
6. patates douces jaune? (ibijumbu vy'umuhoondo)	
7. carrottes? (ikaroti)	
8. prunes de Japon? (amatunda)	
9. Legumes verts (imboga z'amababi, ibibogaboga) épinard, autres légumes à feuilles vertes foncées) ?	
10. papaye? (ipapayi)	
11. bétrave potagère? (beterave)	
12. (sautez)	
13. feuilles d'oignon? (amababi y'ibitunguru)	
14. poireaux? (ibitunguru vyera)	
15. piment rouge? (ipilipili mbuzi)	
16. purée de tomate? (itomati yo mw'ikopo)	
17. mangue? (umwembe)	
18. broccoli? (borokori)	
19. foie? (igitigu)	
20. rognan? (ipfigo)	
21. autre viandes d'organes y compris les abats de volaille, chapon? (inyama zo mu nda n'ubwonko)	
22. huile de palme? (amamesa)	
23. (sautez)	
24. poisson de boite de conserve? (isaridine)	
25. Blueband margarine? (marigarine)	
26. beurre? (amavuta y'inka)	
27. fromage? (ifirimaje)	
28. oranges ou mandarines? (imicungwe canke mandarine)	
29. citrons? (indimu)	
30. ananas? (inanani)	
31. Toutes sortes d'huile (de coton, de porc, de vache, Blueband)? (amavuta y'inka, y'ingurube)	
32. café? (ikawa)	
33. thé? (icayi)	
34. maracouja? (amatunda)	
35. mélasse? (melase)	
36. haricots blancs? (ibiharage vyera)	
37. cowpeas? (impange)	
38. haricots rouges? (ibiharage binini bitukura)	
39. autres haricots? (ibindi biharage)	
40. lentilles? (inkore)	
41. riz? (umuceri)	
42. pomme de terre? (ibiraya)	
43. boeuf, mouton, chêvre, autre viande? (inyama z'imisoso)	
44. fraises rouges? (inkere)	
45. arachides ou cacahuets ? (ibiyoba)	
46. pommes custards (coeur de boeuf)? (umutima w'impfizi)	
47. larves d'abeilles? (ibinyagu)	
48. manioc? (imyumbati)	
49. cocoyam? (amateke y'ikirundi)	
50. igname? (ibisunzu)	
51. grains non-germées? (intete)	
52. son? (isondori)	
53. noix frais (non-grillés)? (imise)	
54. n'importe quel poisson? (ubwoko bw'amafi)	
55. graines (courges, tournesol ou autre)? (inzuzi, ibihoke)	
56. (sautez)	
57. colocasse? (amateke y'ikizungu)	
58. grains d'amarante? (utubuto tw'irengarenga)	
59. graines entières (blé, avoine, bulgur, orge uburo, sorgho)? (intete, amasaka, ingano, amahonda, buruguri, uburo)	
60. maïs ou repas de maïs?	

Pendant combien de jours de la semaine passée (DONNEZ LE NOM) a pris	**Nombre de jours pendant lesquels l'enfant a mangé:**
(ibigori, ubugari bw'ibigori)	
61. produits de tomates cuites? (indya zirimwo itomate zo mu makopo)	
62. goyave? (amapera)	
63. pastèque? (pasiteke)	
64. tomates? (inyanya)	
65. oignons? (ibitunguru)	
66. farine/repas de soja? (isoya, ifu y'isoya)	
67. noix de palme? (ingazi, intimatima y'ikigazi)	
68. avocats? (ivoka)	
69. petits pois? (ubushaza)	
70. champignons? (ibizinu, ubumegeri)	
71. chair de noix de coco? (inazi)	
72. oiseaux sauvages? (inyoni z'ishamba)	
73. les cobaye (imbega borora)	
74. fromage de chèvre? (iforomaje y'impene)	
75. Termites Volantes (iswa)	
76. lait en poudre ou frais? (amata y'ifu canke y'inka, y'impene)	
77. choux? (amashu)	
78. soya?	
79. criquets? (Ibihori, isenene)	
80. oeufs? (amagi)	
81. volaille? (inkoko, inuma, inkanga, imbata)	
82. porc? (ingurube)	
83. yaourt? (ikivuguto)	
84. bière / produits de bière? (ikiyama, inzoga, ugwagwa, imvuzo)	
85. rat des champs? (imbeba z'ishamba)	
86. sauterelles? (inzige)	
87. aubergine verts (intore)?	

26. D'après vous, quels sont les aliments qui ne devraient jamais être donnés à un enfant?
Ku bwanyu, ni izihe mfungurwa zidakwiye namba guhabwa umwana?
□ 1. La mère/personne en charge mentionne quelques aliments qui ne devraient jamais être pris par l'enfant (tabous)
□ 2. La mère/personne en charge ne mentionne aucun aliment que l'enfant ne devrait jamais manger (tabous)

27. D'après vous, quels sont les aliments qui ne devraient jamais être pris par une femme allaitante?
Ku bwanyu ni izihe mfungurwa zidakwiye kuribwa n'umuvyeyi yonsa?
□ 1. La mère/personne en charge mentionne quelques aliments qu'une femme allaitante ne devrait jamais manger (tabous)
□ 2. La mère/personne en charge ne mentionne aucun aliment qu'une femme allaitante ne devrait jamais prendre (tabous)

(*DITES A LA MERE: "Nous allons maintenant parler de la grossesse et la période quand vous étiez enceinte de (DONNEZ LE NOM)")*

28. D'après vous, quels sont les aliments qui ne devraient pas être pris par une femme enceinte?
Ku bwanyu, ni izihe mfungurwa zidakwiye kuribwa n'umuvyeyi yibungenze?
□ 1. La mère mentionne quelques aliments qu'une femme enceinte ne devrait jamais manger (tabous)
□ 2. La mère ne mentionne aucun aliment qu'une femme enceinte ne devrait jamais manger (tabous)

29. Après vos tous premiers mois de la grossesse de (DONNEZ LE NOM), vous mangiez plus que d'habitude, moins que d'habitude ou la même quantité que d'habitude? (en comparaison avec la période de non grossesse).
Inyuma ya mezi make ya mbere mwibungenze (TANGA IZINA), mwafungura vyinshi kuruta, bike kuruta canke ibingana n'ivyo mufungura mutibungenze?
□ 1. plus que d'habitude □ 2. moins que d'habitude □ 3. même quantité que d'habitude
□ 4. je ne sais pas

30. Pendant les mois de grossesse de (DONNEZ LE NOM), avez-vous pris des suppléments de fer qui vous étaient donnés au Centre de Santé ou à la Pharmacie? Pendant combien de mois avez-vous ces suppléments en fer? mois
Mu mezi mwari mwibungenze (TANGA IZINA), mwarafashe ivyunyunyu vy'icuma (fer) mubihawe kw'ivuriro canke kuri farimasiyo? amezi

31. Pendant la grossesse de (DONNEZ LE NOM), est-ce que vous mettiez de la graisse/huile de coton, de porc, de vache, Blueband, ou de palme dans votre nourriture?
Igihe mwari mwibungenze (TANGA IZINA), mwararunga amavuta y'amakoto, y'ingurube, y'inka, Blueband, y'amamesa mu ndya zanyu?
□ 1. Yes □ 2. Non □ 3. Je ne me souviens plus

32. Quelle était la taille de (DONNEZ LE NOM) lors de sa naissance comparativement aux autres nouveaux-nés (bébés) dans la communauté? Très petit, relativement plus petit que la moyenne, en moyenne, relativement plus grand que la moyenne, très grand ***(Répétez les catégories)***
Igihe (TANGA IZINA) yavuka, yangana gute ugereranije n'abandi bana bavuka mu kibano. Muto rwose, muto ugereranije n'abandi benshi, agereranye, munini ugereranije na benshi, munini cane ***(Subiramwo iyo mirwi)***
□ 1. Très petit □ 2. Plus petit que la moyenne □ 3. Moyenne □ 4. plus grand que la moyenne
□ 5. Très grand

II. <u>Questions sur les pratiques de soin de l'enfant</u>

33. Combien de fois vous allez dans les champs ou au marché avec (DONNEZ LE NOM)?
Ni kangahe mujana na (TANGA IZINA) iyo mugiye mu mirima canke kw'isoko (kw'iguriro)
□ 1. Toujours ou presque toujours □ 2. Quelquefois □ 3. Jamais/presque jamais

34. A quel âge, avez-vous laissé (DONNEZ LE NOM) pour la première fois à quelqu'une d'autre afin qu'elle prenne soin de lui/d'elle? mois □ La mère n'a jamais laissé l'enfant à quelqu'une
Ni ryari mwatanguye gusiga (TANGA IZINA) mumusigiye uwundi muntu ngo amubarabire?
amezi ——— □ Umuvyeyi ntarigera asigira umwana uwundi muntu

34a. A qui vous laissez (DONNEZ LE NOM) pour prendre soin de lui/d'elle?
Musigira nde (TANGA IZINA) ngo amubarabire?
□ 1. Grand-mère □ 2. Tante □ 3. La sœur/le frère de l'enfant
□ 4. Un autre membre de la famille □ 5. Une voisine qui est une vieille
□ 6. Une voisine qui est jeune □ 7. Autre
□ 8. La mère/personne en charge ne laisse jamais l'enfant à d'autres personnes qui puissent prendre soin de lui/d'elle

35. Pendant combien d'heures de la journée vous restez loin de (DONNEZ LE NOM) le plus souvent?
_____ heures
Mumara amasaha angahe ku musi mutari kumwe na (TANGA IZINA)

36. Lorsque vous laissez (DONNEZ LE NOM) à d'autres personnes qui prennent soin de lui/d'elle, quel conseil vous leur donnez souvent?
Iyo musize (TANGA IZINA) ku bamubarabira, ni izihe mpanuro mubaha?
□ 1. La mère/personne en charge mentionne le conseil sur l'alimentation
□ 2. La mère.personne en charge ne mentionne pas le conseil sur l'alimentation

□ 3. La mère/personne en charge ne laisse l'enfant à personne.

37. Lorsque vous laissez (DONNEZ LE NOM) à d'autres personnes qui prennent soin de lui/d'elle, vous leur laissez de la nourriture pour l'enfant?
Iyo musize (TANGA IZINA) ku bamusigarana, murabasigira imfugurwa z'umwana?
□ 1. Oui □ 2. Non □ 3. Quelquefois □ 4. La mère ne laisse jamais l'enfant à d'autres gens

III. <u>Questions sur les comportements de prise de soin sanitaire et de gestion des enfants à domicile</u>

38. Est-ce que (DONNEZ LE NOM) a souffert d'une maladie dans les deux dernières semaines?
Mbe (TANGA IZINA) yararwaye mu ndwi zibiri ziheze?
□ 1.Oui □ 2.Non → ***si NON, allez au #40***

39. De quelle maladie (DONNEZ LE NOM) a souffert dans les deux dernières semaines (*Cochez chaque maladie mentionnée)*
(TANGA IZINA) yarwaye indwara iyihe mu ndwi zibiri ziheze?
□ a. Diarrhée
□ b. Rhume/Toux/Pneumonie/ Problèmes de respiration (rapide)
□ c. Fièvre/Malaria
□ d. Autre maladie (SPECIFIEZ): _____

40. Est-ce que (DONNEZ LE NOM) a eu de la rougeole l'année passée?
(TANGA IZINA) yoba yararwaye agasama mu mwaka uheze?
□ 1. Oui □ 2. Non □ 3. Je ne sais pas

41. La dernière fois que (DONNEZ LE NOM) a été malade, avez-vous cherchez un conseil ou une aide ou un traitement de quelqu'un(e)?
Igihe (TANGA IZINA) yaheruka kurwara ubwa nyuma, mwarasavye impanuro, imfashanyo canke kuvurwa ku muntu kanaka?
□ 1. Oui □ 2. Non □ 3. L'enfant n'a jamais été malade, →***si NON ou Jamais malade, sautez au #44***

42. Après avoir remarqué que (DONNEZ LE NOM) est malade, combien de temps avez-vous passé avant que vous cherchiez le traitement?
Mumaze kumenya ko (TANGA IZINA) arwaye, haciye umwanya ungana gute mutaramuvuza?
□ 1. Le même jour ou le jour suivant □ 2. Après deux jours ou plus

43. Où avez-vous cherché de conseil ou de l'aide en premier lieu pour (DONNEZ LE NOM) lorsqu'il (elle) est tombé(e) malade?
Mwarondereye he impanuro canke imfashanyo ubwa mbere igihe (TANGA IZINA) yafatwa n'indwar?

□ 1. A un agent de santé qualifié (Défenseur, Infirmier(ère), Docteur, etc.)

□ 2. A une personne non qualifiée (guérisseur traditionnel, membre de famille, pharmacien, etc.)

44. La dernière fois que (DONNEZ LE NOM) était malade, est-ce que vous lui donniez plus/moins ou même quantité de nourriture que d'habitude?
Igihe (TANGA IZINA) aheruka kurwara, mwamuhaye indya nyinshi/nkeyi kuruta canke zingana n'izo mwahora mumuha?

□ 1. MOINS de nourriture □ 2. MEME quantité de nourriture

□ 3 . PLUS de nourriture □ 4. Jamais malade

45. Avez-vous de moustiquaire dans votre maison? □ 1. Oui □ 2. Non → ***si NON sautez au #48***
Musanzwe mufise umusegetera mu nzu iwanyu?

46. Qui a dormi sous la moustiquaire la nuit passée?
Ni nde yaraye mu musegetera mw'ijoro ryakeye?

□ 1. L'Enfant (DONNEZ LE NOM) □ 2. Autre (Spécifiez): _____

47. Est-ce que la moustiquaire a déjà été imprégnée au moins une fois?
Umusegetera woba warigeze winikirirwa mu muti wirukana imibu canke utundi dukoko?

□ 1. Yes □ 2. Non □ 3. Je ne sais pas

48. Est-ce que (DONNEZ LE NOM) a été soigné(e) contre les vers dans les six derniers mois?
Mbe (TANGA IZINA) yoba yaravuwe inzoka mu mezi atandatu aheze?

□ 1. Oui □ 2. Non □ 3. Je ne sais pas

49. Est-ce que le sel que vous mettez dans la nourriture de (DONNEZ LE NOM) est iodé[14] ou non-iodé?
Mbe umunyu murunga indya za (TANGA IZINA) urimwo icunyunyu ca IODE?

□ 1. Iodé □ 2. Non-iodé □ 3. Je ne sais pas

[14] Remplacez cette question par une autre qui vise un sel iodé connu sous une autre marque sinon, essayez d'expliquer à la mère de façon qu'elle comprenne correctement le sel dont il est question. Si le kit de test d'iode est disponible dit à la mère d'emmener le sel pour le test ou faites un test de porte en porte

IV. Opinion de la société[15]

50. A votre avis, pourquoi quelques enfants sont plus maigres et plus courts que les autres?
Mwibaza ko ari kubera iki abana bamwe bonze kandi ari bagufi kuruta abandi?
□ 1. La mère/personne en charge dit que les voisins ou d'autres personnes peuvent faire que l'enfant soit mal-nourri ou bien elle mentionne d'autres causes "magiques".
□ 2. La mère/personne en charge mentionne la volonté de Dieu ou d'autres raisons spirituelles ou religieuses
□ 3. La mère/personne en charge ne mentionne pas les voisins ou d'autres personnes, des causes "magiques ou d'autres raisons spirituelles/religieuses comme étant la cause de la malnutrition de l'enfant

51. Est-ce que un voisin ou une autre personne dans votre communauté peut être la cause de perte de poids de l'enfant par leurs actes (ex. malédictions, mauvais œil)?
Mbe umubanyi canke uwundi muntu mu kibano barashobora gutuma uwana ata ibiro bivuye ku bintu bakora (umuvumo, ijisho ribi (inzigo))?
□ 1. Oui □ 2. Non □ 3. Je ne sais pas

52. A votre avis, quel est le niveau de gravité lorsque l'enfant est mal-nourri?
Ku bwawe ingorane yo gufungura nabi kw'umwana igushishikaza ku ruhe rugero ?
□ 1. Pas grave (cela ne va pas faire du mal à l'enfant) □ 2. Faible gravité (l'enfant peut être malade)
□ 3. Grave (l'enfant devient malade) □ 4. Très grave (l'enfant pourrait mourir)

II^{ème} PARTIE DU QUESTIONNAIRE

V. D'autres facteurs psychosociaux et environnementaux

L'acceptation (et réceptivité) de l'enfant à la mère/personne en charge

53. Durant le mois passé, pourriez-vous dire que (DONNEZ LE NOM) vous a suffisamment plu, légèrement plu, légèrement déçu, ou fortement déçu?
Mu kwezi kwose guheze, (TANGA IZINA) yoba yarakunezereje rwose canke bisanzwe canke yarakubabaje bisanzwe canke rwose?
□ 1. M'a suffisamment plu
□ 2. M'a légèrement plu
□ 3. M'a légèrement déçu
□ 4. M'a fortement déçu
□ 5. Pas de réponse sûre

[15] Veillez à faire une recherche qualitative avec les mères pourquoi les enfants ne grandissent pas ou sont mal-nourris et considérez les formulations de leurs réponses lorsque vous développez des questions de cette section. Par exemple, au Malawi, WR a trouvé que les mères disaient que les enfants ne grandissaient lorsque leurs esprits étaient éveillés.

54. Quelquefois, les enfants se comportent assez bien et quelquefois font le contraire. Combien de jours de la semaine passée vous avez donné (ou un autre membre de la famille) des coups ou des fessées, si cela est arrivé, à votre enfant? jours
Rimwe na rimwe abana barigenza neza cane, ariko ikindi gihe bakigenza ukutari ko. Ni imisi ingahe yo mu ndwi iheze mwoba (canke uwundi muntu wo muryango) mwarahanye (mwarakubise) umwana wanyu? imisi

55. Lorsque vous êtes tombée enceinte de (DONNEZ LE NOM), est-ce que vous le désiriez à ce moment même, ou plus tard, ou bien vous ne vouliez pas du tout avoir d'autres enfants?
Igihe mwasama imbanyi ya (TANGA IZINA), vyashitse mwari muvyipfuza ko vyoshitse muri ico gihe nyene, canke mu gihe cari gukurikira, canke vyabashikiye mutipfuza kuronka abandi bana?
□ 1. Je voulais être enceinte au même moment
□ 2. Je voulais tomber enceinte plus tard
□ 3. Je ne voulais plus avoir d'autres enfants

Réseau d'appui à la mère/personne en charge

Posez les questions suivantes si la mère est en relation polygame, sinon allez à la question #58

56. Votre mari a combien d'autres femmes? _____ autres femmes
Umugabo wawe afise abandi bagore bangahe?

57. Vous êtes la quantième femme?
Mwebwe mugira umugore wa kangahe?
□ 1. La première □ 2. La deuxième □ 3. Autre (Spécifiez): _____

58. Durant le mois dernier, est-ce que le père de (DONNEZ LE NOM) a contribué de l'argent pour supporter (DONNEZ LE NOM) comme paiement de la nourriture ou des habits?
Mu kwezi guheze, se wa (TANGA IZINA) yoba yaratanze amahera yoo gufasha (TANGA IZINA) nko mu kugura imfungurwa canke ivyambarwa?
□ 1.Oui □ 2.Non

59. Est-ce que vous vivez dans la même maison ou le même enclos avec d'autres adultes de sexe féminin membres de famille?
Musanzwe muba mu nzu imwe canke mu rugo rumwe n'izindi ncuti zikuze z'igitsina gore?
□ 1.Oui □ 2. Non

60. Combien de fois vous visitez ou vous entretenez d'habitude avec un(e) ami(e) ou un membre de famille qui vit en dehors de votre ménage?
Mugendera canke muganira kangahe umugenzi canke incuti mutabana mu muryango?
□ 1.Maintes fois par jour/Kenshi ku musi
□ 2. Maintes fois par semaine/Kenshi ku ndwi

□ 3. Maintes fois par mois/Kenshi ku kwezi

□ 4. Maintes fois par an/Kenshi mu mwaka

□ 5. Moins d'une fois par an/jamais/Munsi ya rimwe mu mwaka-nta narimwe

61. Si vous aviez besoin de l'aide ou vous aviez un problème, y a-t-il quelqu'un(e) de votre famille d'origine qui vit près de vous[16] sur qui vous pourriez compter avoir un séjour pour quelques nuitées? Iyo bishitse mugakenera uwobafasha canke iyo mugize ingorane, hariho umuntu wo mu muryango w'iwanyu aba hafi mwizera ko yobaha indaro y'amajoro make?

□ 1. Oui □ 2. Non □ 3. Je ne sais pas

62. Si vous aviez besoin de l'aide ou vous aviez un problème, y a-t-il quelqu'un(e) de votre famille d'origine qui vit près de vous sur qui vous pourriez compter avoir de l'aide financière?
yogira ico abafashije kijanye n'amahera?

□ 1. Oui □ 2. Non □ 3. Je ne sais pas

63. Pendant les trois derniers mois, combien de fois avez-vous amené (DONNEZ LE NOM) aux activités sanitaires communautaires où un défenseur de la santé ou un docteur était présent pour parler de la prévention des maladies (ex. centres de vaccination, de suivi du bien-être de l'enfant)? _____ fois
Mu mezi atatu aheze, mwajanye (TANGA IZINA) incuro zingahe aho abashinzwe amagara y'abana babasigurira uburyo bwo kwikingira indwara (aho bacabdagira, canke aho bakurikirana ugukura kw'umwana)? _____ incuro

64. Souvenez-vous des 12 derniers mois. Y a-t-il quelqu'un(e) de votre ménage, y compris vous-même, qui a été gravement malade ou cloué au lit pendant une période de plus de 3 mois (y compris quelqu'un(e) qui était mort(e))?
Iyumvire ku mezi 12 aheze. Hari umuntu wo mu rugo iwanyu canke mwebwe nyene yoba yararwaye rwose canke yarakitswe n'amagara mu gihe kirenga amezi 3 (naho yoba yaritavye Imana kuva ico gihe nyene)?

□ 1.Oui □ 2.Non Si "Oui", combien de personnes? _____ ***si NON, sautez au #66***

65. Quel(s) était (étaient) l'(les) âge(s) de la (des) personne(s) qui a (ont) été malade(s) pendant plus de 3 mois ou qui était (étaient) mort(s)?

□ 1. Les personnes ayant l'âge compris entre 15 et 49 ans (âge productif) qui étaient MALADES mais qui ne sont pas morts sont mentionnées

□ 2. Les personnes ayant l'âge compris entre 15 et 49 ans (âge productif) qui étaient MALADES et qui SONT MORTS sont mentionnées

□ 3.Les personnes mentionnées n'ont pas l'âge compris entre 15 et 49 ans (âge productif**)**

[16] Que vous pourriez visiter et retourner chez vous en une journée?

Les relations entre la mère/personne en charge et le mari/partenaire

66. Combien es-tu satisfaite par vos relations avec votre mari/partenaire? ***(Lisez les réponses ci-essous si nécessaire)***
    Mubanye gute n'umugabo wawe ?
    - ☐ 1. Pas du tout satisfaite
    - ☐ 2. Un peu satisfaite
    - ☐ 3. Généralement satisfaite
    - ☐ 4. Complètement satisfaite
    - ☐ 5. N'est pas mariée/ne vit pas avec son partenaire

67. Combien de jours par semaine d'habitude votre mari/partenaire se querelle (dispute/se bat) avec vous ou avec vos enfants?
    Ni imisi ingahe mu ndwi umugabo wawe/uwo mwubakanye yama atata (arwana) nawe canke n'abana bawe?
    - ☐ 1. Aucun (d'habitude)/jamais
    - ☐ 2. Un ou deux jours par semaine
    - ☐ 3. Trois à cinq jours la semaine
    - ☐ 4. Six jours ou plus par semaine
    - ☐ 5. N'est pas mariée/ne vit pas avec son partenaire

68. Les relations Mari/Femme **(Cochez Oui, Non ou Je ne sais pas pour chaque case en relation avec ce que la personne en charge dit)**			
(DISONS): Quelquefois le mari est ennuyé ou énervé des choses que sa femme fait. *(TUVUGE): Rimwe na rimwe umugabo arashavuzwa n'ivyo umugore wiwe akora*	OUI	NON	Je ne sais pas
a. A votre avis, est-ce que le mari est justifié lorsqu'il bat ou frappe sa femme/partenaire lorsque celle-ci est sortie sans aviser son mari? Ku bwawe, umugabo ari mu kuri iyo akubise umugore wiwe/uwo bubakanye iyo yasohotse atabimenyesheje umugabo wiwe?			
b. A votre avis, est-ce que le mari est justifié lorsqu'il bat ou frappe sa femme/ partenaire lorsque celle-ci ne prend pas soin de leurs enfants correctement? Ku bwawe, umugabo ari mu kuri iyo akubise umugore wiwe/uwo bubakanye iyo atitaho neza abana babo?			
c. A votre avis, est-ce que le mari est justifié lorsqu'il bat ou frappe sa femme/partenaire lorsque celle-ci discute avec son mari? Ku bwawe, umugabo ari mu kuri iyo akubise umugore wiwe/uwo bubakanye iyo aharirije umugabo wiwe?			
d. A votre avis, est-ce que le mari est justifié lorsqu'il bat ou frappe sa femme/ partenaire lorsque celle-ci refuse de dormir/faire du sexe avec son mari? Ku bwawe, umugabo ari mu kuri iyo akubise umugore wiwe/uwo bubakanye iyo yanse gukora amabanga y'abubatse n'umugabo wiwe?			
e. A votre avis, est-ce que le mari est justifié lorsqu'il bat ou frappe sa femme/partenaire lorsque celle-ci brûle les aliments? Ku bwawe, umugabo ari mu kuri iyo akubise umugore wiwe/uwo bubakanye iyo yazigije inkono?			
f. A votre avis, est-ce que le mari est justifié lorqu'il bat ou frappe sa femme/partenaire lorsque celui-ci est jaloux? Ku bwawe, umugabo ari mu kuri iyo akubise umugore wiwe/uwo bubakanye iyo umugabo agize gupfuha?			
g. A votre avis, est-ce que le mari est justifié lorqu'il bat ou frappe sa femme/partenaire lorsque celle-ci pour une autre quelconque raison? (Si la réponse est oui): Quelle est cette raison? (Spécifiez)? Ku bwawe, umugabo ari mu kuri iyo akubise umugore wiwe/uwo bubakanye bivuye ku yindi mco iyo ariyo yose? (inyishu niyaba ari ego): Ni iyihe mvo?			
Total Vyose hamwe			

69. Sentez-vous que une personne dans votre famille devrait réduire la prise de l'alcool?
Wiyumvira ko hari umuntu wo mu muryango wanyu akwiye kugabanya ku nzoga anywa?

□ 1. Oui □ 2. Non □ Je ne peux rien dire

L'auto-description des Symptômes Dépressifs de la mère/personne en charge

70. Les déclarations suivantes décrivent comment les gens se croient d'habitude. Pour chaque question, indiquez, s'il vous plait, combien de fois vous vous estimez de cette manière durant la semaine dernière. *(Encerclez le nombre de la meilleure réponse pour chaque déclaration)*

Encerclez la cellule appropriée après avoir lu la question ci-dessous	Rarement ou aucune fois (0 jours/ semaine)	Quelquefois ou peu de fois (1-2 jours/ semaine)	Occasionnellement ou des fois modérées (3-4 jours/ semaine)	La plupart des fois ou toutes les fois (5-7 jours/ semaine)	Points (marquez les nombres encerclés ici)
a. Durant la semaine dernière, combien de jours vous vous êtes attristée? Mu ndwi iheze, ni imisi ingahe mwiyumvise mutanezerewe	**1**	**2**	**3**	**4**	
b. Pendant la semaine dernière, combien de jours vous vous êtes senti solitaire? Mu ndwi iheze, ni imisi ingahe mwiyumvise muri inyakamwe	**1**	**2**	**3**	**4**	
c. Durant la semaine dernière, combien de jours vous avez eu de courtes durées urgentes Mu ndwi iheze, ni imisi ingahe mwagize ibibazo vy'akanya gato?	**1**	**2**	**3**	**4**	
d. Durant la semaine passée, combien de jours vous pourriez dire vous avez mené une vie plaisante? Mu ndwi iheze, ni imisi	**1**	**2**	**3**	**4**	

ingahe mwibanza mwagize ibihe vyiza mu buzima?					
e. Durant la semaine dernière, combien de jours vous pourriez dire vous vous êtes sentie déprimée? Mu ndwi iheze, ni imisi ingahe mwiyumvise mufise ibibazo vyo mu mutwe?	**1**	**2**	**3**	**4**	
f. Durant la semaine passée, combien de jours vous vous êtes sentie désintéressée ou démotivée de faire quelque chose? Mu ndwi iheze, ni misi ingahe mwiyumvise mutipfuza/mutanezerez wa no gukora ikintu na kimwe?	**1**	**2**	**3**	**4**	
				Points Totaux:	

Les Pratiques d'Hygiène apprises à l'Enfant

71. Quelles sont les pratiques d'hygiène que vous apprenez à (DONNEZ LE NOM)? *(MARQUEZ TOUT CE QUI EST APPLICABLE. DEMANDEZ, "Une autre chose restante?" APRES CHAQUE REPONSE)*
Ni utuhe dukorwa tw'isuku mwigisha (TANGA IZINA)?

□ a. Laver les mains avec du savon (ou avec les cendres) avant de manger

□ b. Laver les mains avec du savon (ou avec les cendres) chaque fois à la sortie des lieux d'aisance

□ c. Aller à la selle dans une fosse d'aisance ou dans un pot de bébé

□ d. Ne pas mettre les mains dans les récipients d'eau à boire.

□ e. Utiliser le récipient réservé à puiser de l'eau pour prendre de l'eau à boire

□ f. Ne boire que de l'eau propre (ne buvez pas à partir de la source ou d'une flaque d'eau

□ g. Conserver les aliments hors de portée des mouches

□ h. Garder les aliments loin des excréments des animaux

□ i. Conserver les aliments hors de portée des animaux

□ j. Garder les aliments loin des excréments de l'homme

□ k. Laver les fruits et légumes avant de les consommer

□ l. Eviter les aliments qui ont été en contact avec le sol.

□ m. Eviter les aliments qui ont été en contact avec les animaux ou les oiseaux

□ n. Autre (Spécifiez): _____

□ o. Je ne sais pas

□ p. Aucun

Lavage des mains

72. Avez-vous utilisé du savon ou des cendres aujourd'hui ou hier pour nettoyer ou laver? Si c'est ainsi, qu'est-ce que vous avez nettoyé/lavé?
Mwarakoresheje isabuni canke umunyota uyu musi canke ejo mu gusukura canke kwoza? Nimba mwarayikoresheje, mwayikoresheje musukura cane mwoza iki?

□ 1. La personne en charge mentionne le savon ou les cendres pour laver les mains

□ 2. La personne en charge ne mentionne pas le savon ou les cendres pour laver les mains

73. Quand est-ce que vous lavez vos mains avec du savon ou des cendres?
Ni ryari mukoresha isabuni canke umunyota mu gukaraba intoke?
(MARQUEZ TOUT CE QUI EST APPLICABLE. DEMANDEZ, "Une autre fois encore?" APRES CHAQUEREPONSE)

□ a. Lorsque je prends douche

□ b. Avant de préparer la nourriture

□ c. A la sortie des lieux d'aisance

□ d. Avant de nourrir ou allaiter les enfants

□ e. Après s'être occupé d'un enfant qui a fait caca

□ f. Autre (Spécifiez): _____

Traitement des excréments de l'enfant

74. La dernière fois que (DONNEZ LE NOM) est allé(e) à la selle, où est-ce qu'il(elle) a fait caca?
Ubwa nyuma (TANGA IZINA) yituma, yagiye hehe?

□ 1. Dans les installations sanitaires normalement utilisées (ex. latrine, W.C.)

□ 2. Dans un pot de bébé (pot d'intérieur, cuvette)

□ 3. Dans le linge réutilisable

□ 4. Dans des linges à usage unique

□ 5. Dans la maison/cour

□ 6. En dehors des enceintes du ménage

□ 7. Dans ses habits

□ 8. Autre (Spécifiez): _____

□ 9. Je ne sais pas

De l'eau à boire

75. Est-ce que d'habitude vous conservez/stockez de l'eau à boire dans la maison?
Musanzwe mushingura amazi munywa mu nzu?

□ 1. Oui

□ 2. Non, → ***Si NON, complétez la réponse 4 pour #76 et sautez au #77***

□ 3. Je ne sais pas, → ***Si NON, complétez la réponse 4 pour #76 et sautez au #77***

76. Combien de récipients utilisez-vous pour stocker de l'eau? Combien de ces récipients utilisés dans votre maison pour stocker de l'eau sont couverts?
Mukoresha ibikoresho bingahe gushingura amazi? Ni bingahe muri ivyo mukoresha gushingura amazi munywa bipfundikiye?

□ 1. Tous les récipients

□ 2. Quelques récipients

□ 3. Aucun récipient

□ 4. L'eau n'est pas stockée dans la maison

77. Dans la semaine passée, avez-vous fait quelque chose à l'eau donnée à (DONNEZ LE NOM) pour la rendre plus propre et plus potable? Si c'est ainsi, qu'est-ce que vous avez fait?
Mu ndwi iheze, hari ico mwakoze ku mazi yo kunywa mwahaye (TANGA IZINA) kugira abe meza yo kunywa. Nimba ariko biri, ni iki mwakoze?
(MARQUEZ TOUT CE QUI EST APPLICABLE. DEMANDEZ, "Une autre chose encore?" APRES CHAQUE REPONSE).

□ a. N'a rien fait/ n'a pas traité

□ b. Bouillir

□ c. Ajouter de l'eau de Javel/chlore

□ d. Filtrer à travers un habit

□ e. Filtre (céramique, sable, composite)

□ f. Désinfectant solaire

□ g. Par sédimentation

□ h. Other (Spécifiez): _____

Pratiques de Gestion des Aliments

78. Pouvez-vous me dire comment vous gardez les aliments propres à manger?
Mwombwira ukuntu mushingura indya zikagumana isuku?
(MARQUEZ TOUT CE QUI EST APPLICABLE. DEMANDEZ, " Une autre chose encore?" APRES CHAQUE REPONSE)

□ a. Laver les mains avant la préparation

□ b. Laver les mains avant de manger

□ c. Laver les ustensiles et les récipients avant la préparation

□ d. Laver les aliments méthodiquement

□ e. Cuire les aliments méthodiquement

□ f. Consommer toute la nourriture à la fois

□g. Eviter de garder les restes

□ h. Réchauffer les restes des aliments avant de les consommer
□ i. Couvrir les récipients des aliments
□ j. Empêcher les mouches de toucher les aliments
□ k. Conserver les aliments au froid
□ l. Enfermer les aliments dans la maison ou un paravent
□ m. Utiliser des ustensiles propres pour récupérer des aliments
□ n. Other (Spécifiez): _____
□ o. Je ne sais pas

REMERCIEZ LA MERE/PERSONNE EN CHARGE POUR SON TEMPS!

Annex D

Results that Were NOT Statistically Significant - Burundi

For the following variables, no statistically-significant differences were found between positive deviant (PD) and malnourished children in the Burundi Local Determinants of Malnutrition study.

1. ***Demographics:***

No statistically-significant differences were found between PD and malnourished children as measured by the following variables:

- **Child's age** – Average age of PD child=27.3 months, average age of malnourished child=21.0 months.
- **Principal language spoken by mother** – 100% of the mothers' principal language was Kirundi.
- **Gender of child** – 50% of PD children were male, 52% of malnourished children were male.
- **Age of mother** – Average age of PD mothers=30.9 years, average age of mothers of malnourished children=29.6 years.
- **Whether father was alive and living with mother** – No relationship was found between PD and whether or not the father was alive and living with the mother. 93.5% of PD children and 93.8% of malnourished children had a father alive and living with mother. [ns]
- **Family type** – No relationship was found between PD and family type (child living with nuclear family vs. child orphaned or living with extended family). 9.3% of PD children and 4.4% of malnourished children lived with extended family. 13.0% of mothers of PD children were in a polygamous relationship vs. 10.4% of mothers of malnourished children. [ns]
- **Number of siblings** – No relationship was found between PD and number of siblings. 41.3% of PD children vs. 43.8% of malnourished children had more than 2 siblings.

2. ***Mother's Income-generating work***

No statistically-significant difference was found between PD and malnourished children as measured by the following variable:

- **Roof construction (proxy for SES)** – 47.6% of mothers of PD children and 32.6% of mothers of malnourished children lived in homes with roofs made of good materials, such as metal or tiles. [ns]

3. ***Child Feeding Practices***

No statistically-significant differences were found between PD and malnourished children as measured by the following variables:

- **Child (ever) breastfed** – 93.5% of PD children and 100% of malnourished children were breastfed at some point. [ns]

- **Giving pre-lacteal feeds** – 9.3% of mothers of PD children and 14.6% of mothers of malnourished children gave their children pre-lacteal feeds. [ns]
- **Completely emptying breasts** – 53.5% of mothers of PD children and 60.4% mothers of malnourished children state that they usually completely empty their breasts when breastfeeding. [ns]
- **Exclusive breastfeeding** – 71.7% of mothers of PD children exclusively breastfed until 6 months, vs. 62.5% of mothers of malnourished children. [ns}
- **Age at complete weaning** – PD children were completely weaned at 19.5 months on average. Malnourished children were completely weaned at 24.9 months on average.
- **Speed of weaning** – 20.8% of mothers of PD children and 37.5% of mothers of malnourished children weaned slowly from breastfeeding instead of abruptly. [ns]
- **Introduction of complementary feeding in child's diet** – 84.8% of mothers of PD children and 75% of mothers of malnourished children introduced solid foods at the proper time (between 6-10 months). [ns]
- **Age at introduction of solids** – The average age for PD and malnourished children to start receiving food or liquids other than breastmilk was 6.0 months. The average age for introduction to solid food for PD children was 7.0 months. The average age for introduction to solid food for malnourished children was 6.5 months. [ns]
- **Bottle feeding (ever)** – 2.2% of PD children and 4.2% of malnourished children were bottle fed at some point. [ns]
- **Current bottle feeding** – 0% of PD and malnourished children were currently being bottle fed.
- **Daily meals and snacks** – PD children receive an average of 2.6 meals and 1.3 snacks. Malnourished children receive an average of 2.5 meals and 1.2 snacks. PD children received on average 3.9 meals plus snacks a day. When breastfeeding was included, PD children received on average 8.9 meals/snacks/BFs and malnourished children received on average 9.6 meals/snacks/BFs.
- **Consumption of five or more daily feeds by child** (including breastfeeding) – 60.9% of PD children and 79.2% of malnourished children received five or more daily feeds. [ns]
- **Consumption of at least one snack daily** – 63% of PD children and 68.8% of malnourished children were given snacks on a daily basis. [ns]
- **Eating from a common plate** – 56.5% of PD children and 47.9% of malnourished children eat from a plate shared with others. [ns]
- **Eating the same food as the rest of the family** – 84.8% of PD children and 93.8% of malnourished children eat the same food as the rest of the family. [ns]
- **Density of food** – 48.6% of PD children and 50% of malnourished children were fed solid foods of a thick or mashed texture. [ns]
- **Child being fed by neighbors** – 83% of PD children are occasionally fed by neighbors, 66% of malnourished children are. [ns]
- **Mother having food taboos concerning foods a child should eat** – 52.2% of mothers of PD children and 60.4% of mothers of malnourished children have food taboos (i.e. they believe that there are some foods that a child should never eat.) [ns]

4. ***Foods Consumed by the Mother during pregnancy and breastfeeding***

No statistically-significant differences were found between PD and malnourished children concerning the mother's diet during pregnancy or lactation as measured by the following variables:

- **Mother having food taboos concerning foods she eats during pregnancy** – 33.3% of mothers of PD children and 52.1% of mothers of malnourished children have food taboos (i.e. they believe that there are some foods that a pregnant woman should never eat.) [ns]
- **Amount of food eaten during pregnancy (self report) compared with usual level of eating** – 11.1% of mothers of PD children and 14.6% of mothers of malnourished children reported eating more than usual when they were pregnant. [ns]
- **Iron supplementation during pregnancy** – 33.3% of mothers of PD children and 27.1% of mothers of malnourished children took iron supplements while they were pregnant. Mothers of PD children took iron supplements for an average of 1.04 months. Mothers of malnourished children took iron supplements for an average of 0.67 months. [ns]
- **Mothers regularly adding fat to their food during pregnancy** – 86.7% of mothers of PD children and 77.1% of mothers of malnourished children regularly added fat to their food during pregnancy. [ns]
- **Mother having food taboos concerning foods she eats during breastfeeding** – 34.8% of mothers of PD children and 47.9% of mothers of malnourished children have food taboos (i.e. they believe that there are some foods that a breastfeeding woman should never eat.) [ns]
- **Mother's consumption of β-carotene foods during breastfeeding** – All mothers ate β-carotene foods during breastfeeding.
- **Mother's consumption of B1-rich foods during breastfeeding** – 86.0% of mothers of PD children vs. 74.5% of mothers of malnourished children ate B1-rich (thiamine) foods during breastfeeding. [ns]
- **Mother's consumption of B12-rich foods during breastfeeding** – 78.6% of mothers of PD children vs. 60.4% of mothers of malnourished children ate B12-rich foods during breastfeeding. [ns]
- **Regularly adding fat to mother's meals during breastfeeding** – 23.9% of mothers of PD children vs. 12.5% of mothers of malnourished children regularly added more fat than normal to their meals. [ns]
- **Iron supplementation during breastfeeding** – 6.5% of mothers of PD children and 2.1% of mothers of malnourished children took iron supplements while breastfeeding. The average number of months that the supplement was taken was 0.087 for mothers of PD children and 0.17 for mothers of malnourished children. [ns]

5. ***Specific Foods Consumed by the Child***

Mothers were asked about the frequency of their child's consumption of 85 specific foods. They were also asked to state the food and drinks consumed by the child in the previous 24 hours (38 foods/drinks were identified). 84 out of the 85 foods and

36 out of 38 foods were found to not be statistically related to PD status. (See body of report and the questionnaire.)

6. ***Child Care Practices***

No statistically-significant differences were found between PD and malnourished children concerning the mother's child care practices as measured by the following variables:

- **Average age at which mother leaves child at home with someone else** – The average age when mothers of PD children left them in the care of someone else was 14 months. The average age when mothers of malnourished children left them was 13.5 months. [ns]
- **Average number of hours away from mother** – PD children are away from their mothers an average of 5.7 hours per day. Malnourished children are away from their mothers an average of 4 hours per day. [ns]
- **Person taking care of the child during the day** – The most common caretakers mentioned that mothers leave their child with are the grandmother and the child's sibling. 22.2% of PD children and 12.5% of malnourished children are left in the care of their grandmother. 39.1% of PD children and 25.0% of malnourished children are left in the care of a sibling. [ns]
- **Whether or not mother gives feeding advice to other caregivers** – 69.2% of mothers of PD children and 80.0% of mothers of malnourished children give feeding advice to other caretakers of the child. [ns]
- **Whether or not mother leaves food for the child when she goes out** – 65.9% of mothers of PD children and 65.5% of mothers of malnourished children leave food to give to the child when she goes out. [ns]

7. ***Healthcare Seeking Behavior and Home Management of Sick Children***

No statistically-significant differences were found between PD and malnourished children concerning the mother's healthcare seeking behavior and home management of sick children as measured by the following variables:

- **Child ill with ARI during the past two weeks** – 10.9% of mothers of PD children and 22.9% of mothers of malnourished children had a child who was ill with ARI during the past two weeks. [ns]
- **Child ill with fever or malaria during the past two weeks** – 13.0% of mothers of PD children and 27.1% of mothers of malnourished children had a child who was ill with fever or malaria during the past two weeks. [ns]
- **Child ill with measles during the past year** – 19.6% of mothers of PD children and 14.6% of mothers of malnourished children had a child who was ill with measles during the past year. [ns]
- **Mother sought help for illness the last time the child was ill** – 63.6% of mothers of PD children and 75.6% of mothers of malnourished children sought help for the illness the last time the child was ill. [ns]
- **Mother sought help for the child's illness the same or next day** – 72.4% of mothers of PD children and 68.6% of mothers of malnourished children sought help for the child's illness the same or next day. [ns]
- **Mother sought care for the sick child from a trained person** – 65.5% of mothers of PD children and 80.0% of mothers of malnourished children sought help for the sick child from a trained person. [ns]

- **Mother gives child same or more food during their last illness** – 33.3% of mothers of PD children and 27.7% of mothers of malnourished children gave their child the same amount or more food during their last illness. [ns]
- **Mothers used an insecticide-treated bed net for the child** – 100% of mothers of PD and malnourished children who had an insecticide-treated bed net used them for the child. [ns] This statistic includes 67% of all the PD mothers and 54% of the mothers of malnourished children.
- **Child dewormed in the past six months** – 69.6% of mothers of PD children and 55.3% of mothers of malnourished children had their child dewormed in the past six months. [ns]
- **Mother regularly uses iodized salt in the child's food** – 93.5% of mothers of PD children and 80.6% of mothers of malnourished children regularly uses iodized salt in the child's food. [ns]

8. ***Mother's (or Caregiver's) World View***

No statistically-significant differences were found between PD and malnourished children concerning the mother's world view as measured by the following variables:

- **Whether or not the mother believes that neighbors or other persons can make her child become malnourished, or mentions other "magic" causes** – 34.8% of mothers of PD children and 37.5% of mothers of malnourished children believe that someone else can make their child become malnourished. [ns]
- **Whether or not the mother believes that "a neighbor or another person in your community make a child lose weight by something that they do (e.g., curses, evil eye)"** – 52.4% of mothers of PD children and 54.5% of mothers of malnourished children believe that someone else can do something that will make their child become malnourished. [ns]
- **Whether or not mothers believe that malnutrition is a serious problem** – 80.4% of mothers of PD children and 89.6% of mothers of malnourished children believe that malnutrition is a serious problem. [ns]

9. ***Mother/Caregiver's Acceptance of (and Responsiveness to) Child***

No statistically-significant differences were found between PD and malnourished children concerning the mother or caregiver's acceptance of – and responsiveness to – the child as measured by the following variables:

- **Degree to which the mother says that her child has pleased her in the past month** – 80.4% of mothers of PD children and 70.8% of mothers of malnourished children said that their child had pleased them "somewhat" or "very much" during the past month. [ns]
- **Average number of days hit/spanked** – PD children were hit/spanked an average of 0.67 days per week. Malnourished children were hit/spanked an average of 1.17 days per week. [ns]
- **Whether or not mothers wanted their pregnancy** – 71.1% of mothers of PD children and 58.3% of mothers of malnourished children said that they wanted their pregnancy with this child. [ns]
- **Responsiveness score** – The average responsiveness score for mothers of PD children was 2.3. The average responsiveness score for mothers of malnourished children was 1.8. The responsiveness score was comprised of positive answers to

child pleased mother and pregnancy was wanted and a negative answer to hitting/spanking child. [ns]

10. *Mother/Caregiver's Support Network*

No statistically-significant differences were found between PD and malnourished children concerning the mother or caregiver's support network as measured by the following variables:

- **Average social support score of mother** (scale does not include caring for a family member with a chronic illness) – Mothers of PD children had an average social support score of 3.2. Mothers of malnourished children had an average social support score of 3.3. [ns]
- **Number of community health activities mother has participated in over the past three months** – Mothers of PD children participated an average of 0.74 times and mothers of malnourished children participated an average of 0.88 times. [ns]
- **Whether or not father contributes money to support the child** – 68.9% of fathers of PD children and 62.5% of fathers of malnourished children contributed money to support the child. [ns]
- **Whether or not the mother has a female relative living in the same house or compound with her** – 21.7% of mothers of PD children and 18.8% of mothers of malnourished children had a female relative living in the same house or compound with her. [ns]
- **Whether or not the mother has someone in her family of origin who lives close by whom she could count on to let her stay with them for a few nights** – 76.1% of mothers of PD children and 72.9% of mothers of malnourished children have family who live close by to stay with. [ns]
- **Whether or not the mother says that there is someone from her family of origin who lives close by who she could count on for financial help** – 39.1% of mothers of PD children and 33.3% of mothers of malnourished children have family who live close by who she could count on for financial help. [ns]
- **Whether or not there was a bedridden family member** – 32.6% of mothers of PD children and 43.8% of mothers of malnourished children reported having a member of the family sick longer than 3 months in the last year. [ns] 26.1% of mothers of PD children and 25.0% of mothers of malnourished children reported having a family member of a productive age (15-49 years) who was sick longer than 3 months or died in the last year.

11. *Mother/Caregiver's Relationship with Husband/Partner*

No statistically-significant differences were found between mothers of PD and malnourished children concerning the mother or caregiver's relationship with her husband/partner as measured by the following variables:

- **Mothers relationship to spouse (score)** – A score was used to determine the mother's relationship with her spouse (0=Poor; 4=Excellent). Mothers of PD children had an average score of 1.6. Mothers of malnourished children had an average score of 1.9.
- **Whether or not the mother says that she is mostly or completely satisfied with her relationship with her husband** – 65.9% of mothers of PD children and 78.3% of mothers of malnourished children stated that they

were mostly or completely satisfied with their relationship with their husband. [ns]

- **Number of situations (from list) for which mothers say it is okay for a husband to hit or beat his wife (as a proxy for spousal abuse)** – Mothers were given six specific situations and asked during which of the situations was it okay for a husband to hit or beat his wife. Mothers of PD children mentioned an average of 2.9 situations. Mothers of malnourished children mentioned an average of 2.8 times. [ns] The percentages for both groups were as follows:
    - **If she goes out to do something without telling him**: 59.6%
    - **If she neglects the children**: 72.3%
    - **If she argues with him**: 31.9%
    - **If she refuses to sleep with him or have sex with him**: 45.2%
    - **If she burns the food**: 47.3%
    - **If the husband is jealous**: 10.6%
    - **Any other reason**: 20.2%

- **Quarreling within family** – 45.7% of mothers of PD children and 39.6% of mothers of malnourished children reported that their husband/partner quarrels with them or their children at least once a week. [ns] 7.0% of mothers of PD children and 6.7% of mothers of malnourished children reported that their husband/partner quarrels with them or their children frequently (3 or more times per week). [ns]
- **Whether or not the mother or caregiver says that someone in their family needs to cut their alcohol consumption** – 93.5% of mothers of PD children and 85.1% of mothers of malnourished children reported that someone in the family need to cut their alcohol consumption. [ns]

12. *Mother/caregiver's Self-report of Symptoms of Depression*

No statistically-significant differences were found between mothers of PD and malnourished children concerning the mother or caregiver's self-report of symptoms of depression as measured by the following variables:

- **Depression symptoms score** – We used a six item instrument to calculate to what degree mothers had signs of depression. (Higher score = more depressed). Mothers of PD children had an average score of 12.3. Mothers of malnourished children had an average score of 12.8. [ns]
- **Whether or not mothers said that they felt depressed on half or more days of the week** – 80.4% of mothers of PD children and 89.6% of mothers of malnourished children said that they felt depressed on half or more days of the week. [ns]

13. *Hygiene Practices*

No statistically-significant differences were found between mothers of PD and malnourished children concerning the mother or caregiver's hygiene practices as measured by the following variables:

- **Number of hygiene practices the mother or caregiver regularly teaches her child** – Mothers were asked which hygiene practices they regularly teach to their child. Mothers of PD children mentioned 2.1 practices on average. Mothers of malnourished children mentioned 1.5 practices on average. [ns]

- **Hygiene index of mother's or caregiver's practices** – This was a compilation score of hygiene behaviors practiced at above average levels. Mothers of PD children had an average score of 2.6. Mothers of malnourished children had an average score of 2.3. [ns]
- **Whether or not mother or caregiver claimed to have used soap or ashes in the past day or previous day for cleaning or washing** – 82.6% of mothers of PD children and 79.2% of mothers of malnourished children claimed to have used soap or ashes in the past day or previous day for cleaning or washing. [ns]
- **Correct times mother or caregiver washed their hands with soap or ashes during the current or previous day** – Mothers of PD children mentioned 2.0 correct times that they washed their hands on average. Mothers of malnourished children mentioned 1.9 correct times on average.
- **Whether or not the mother mentions proper water storage practices** – 34.8% of mothers of PD children and 41.7% of mothers of malnourished children mentioned proper water storage practices. [ns]
- **Whether or not the mother mentions a proper water treatment method** – 6.5% of mothers of PD children and 8.3% of mothers of malnourished children mentioned using a proper water treatment method. [ns]
- **Number of practices mother or caregiver mentions concerning safe food handling and preservation** – Mothers of PD children mentioned an average of 2.8 safe food handling practices. Mothers of malnourished children mentioned an average of 2.9 practices.

Annex E

Burundi Local Determinants of Malnutrition Study
Factors Associated with Diarrhea in Past Two Weeks

Factor	OR	p-value
Not teaching child to wash fruits/vegetables before consumption: 0% of those who teach their child to wash fruits and vegetables before consuming had diarrhea in the past two weeks vs. 39% of those who did not.[17]	0.0	0.02
Lack of consumption of Vitamin A rich foods during lactation: 32% of those who ate vitamin A rich foods during lactation had diarrhea vs. 86% who did not.[20]	0.08	0.004
Being younger than the average age: Being young: 58% of younger than median had diarrhea vs. 10.9% of older children.	11.5	0.00000
Early weaning: 44% of those who weaned children <24m had diarrhea vs. 8.3% of those who did not.[18]	8.74	0.001
Give 5+ feedings/day: 46% of those who gave five or more meals/snacks in the past day had diarrhea vs. 10.7% of those who did not.[21]	6.94	0.001
Gender: 54% of boys had diarrhea vs. 15.2% of girls had diarrhea in the past two weeks. [21]	0.15	0.0000
Not using clean utensils: 9.1% of mothers who say that they use clean utensils to retrieve food had a child with diarrhea vs. 38.6% of those who did not.[20]	0.16	0.049
Visiting friend/family members often: 45% of mothers who say that they visit a friend or other family outside of the HH several times a week or several times per day or per week had diarrhea vs. 13% of those who say they visit several times a month or less.[20]	5.4	0.002
Taking child to market: 58% of those who always take the child with them to the market had diarrhea vs. 21% of those who do not. [21]	5.37	0.0002
Being smaller at birth: 28% of children of mothers who say the child was average, large than average, or very large had diarrhea vs. 67% of those who said child was smaller than normal or very small. [21]	0.19	0.002
Nutritional Status: 52% of Malnourished (WAZ<-2) had diarrhea vs. 17% of positive deviants (WAZ>-1) had diarrhea. [21]	5.2	0.000
Giving prelacteal feeds: 63.6% of those who received prelacteal feeds had diarrhea vs. 33% of those who did not. [21]	3.63	0.04

[17] Zero cell: cannot test for confounding by age.
[18] No evidence of confounding by age.

Factor	OR	p-value
Giving solid/semi-solid foods @ 6-10m: 40% of those who gave first solid/semi-solid food between 6-10m of age had diarrhea vs. 16% of those who were not. [21]	3.56	0.04
Not taking iron supplements during pregnancy: 18% of women who took any iron supplements during pregnancy had diarrhea vs. 43% of those who do not. [21]	0.29	0.02
Not teaching child handwashing with soap: 23% of those who teach their child to wash hands with soap before eating had diarrhea vs. 47% of those who do not. [21]	0.35	0.02
Not defecating in proper place: 21.6% of those who defecated in a proper place had diarrhea vs. 44% of those who did not. [21]	0.35	0.03
Believing in taboo foods during lactation: 49% of those who say that there are taboo foods during lactation had diarrhea vs. 26% of those who say that there are not taboo foods during lactation. [21]	0.36	0.02
Lack of consumption of protein-rich foods during lactation: 31% of those who ate high-protein foods during lactation had diarrhea vs. 50% of those who did not. *[Note: Small amount of confounding by age.]*	0.44	0.08