TOMAK

To'os ba Moris Di'ak

Farming for Prosperity

Qualitative Assessment of Food Consumption: Survey Report

Technical Report 9

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Adam Smith International

MERCY CORPS

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Abbreviations & Acronyms

ACIAR	Australian Centre for International Agricultural Research
ASI	Adam Smith International Pty Ltd
AVANSA	Avansa Agricultura Project (USAID)
AWPB	Annual workplan and budget
BA	Barrier analysis
BESIK	Community Water, Sanitation and Hygiene Program (Australian Aid)
CA	Conservation agriculture
CDE	Centre for Enterprise Development
CD-NIP	Community Driven Nutrition Improvement Program (Catholic Relief Services)
COMPAC-TL	Combatting Malnutrition and Poverty through Inland Aquaculture in Timor-Leste Program (Mercy Corps)
DBC	Designing for behaviour change
DFAT	Australian Department of Foreign Affairs and Trade
DLC	District Liaison Committee
FAO	Food and Agriculture Organisation
FGD	Focus group discussion
GBV	Gender-based violence
GoTL	Government of Timor Leste
GESIA	Gender & social inclusion analysis
HH	Household
H&S	Health & safety
H&SP	Health & safety plan
IADE	Institute for Business Support
IAS	Independent Advisory Services
ICS	Information and Consumption Survey
IDD	Investment design document
IFF	Integrated fish farming
KAP	Knowledge, attitudes & practice
KHG	Keyhole garden
KII	Key informant interview
KONSTANTIL	National council for food security, sovereignty and nutrition in Timor Leste
LTA	Long term adviser
M4P	Making markets work for the poor
MAF	Ministry of Agriculture and Fisheries
MCIE	Ministry of Commerce, Industry and the Environment
MDF	Market Development Facility (Australian Aid)
MEP	Monitoring & evaluation plan
MEP	Monitoring & evaluation framework
MIYCN	Mother infant & young child nutrition
MoH	Ministry of Health
MRG	Monitoring review group
MSG	Mother Support Group
NGO	Non-government organisation
NPO	National Program Office
NSA	Nutrition sensitive agriculture
OFM	Operations & finance manager

PD	Program Director
PGS	Program Guiding Strategy
PHD	Partnership for Human Development (Australian Aid)
PLW	Pregnant and lactating women
PM	Program manager
PNDS	National Program for Village Development Support (GoTL executed, Australian TA support)
PSF	*Programa Saude Familia* (Family Health Program
R4D	Roads for Development Program (Australian Aid)
RMF	Results measurement framework
RMP	Risk management plan
RPM	Regional Program Manager
RPO	Regional program office
RTTL	Radio and Television Timor
SBCC	Social behaviour change communication
SEM	Secretariat of State for the Socio-Economic Support of Women
SISCa	*Sistema Integradu Saude Comunitaria* (Community Health Outreach Service)
SOL	Seeds of Life Program (ACIAR)
ST	Short term
STA	Short term adviser
TL	Team leader
TLFNS	Timor Leste Food and Nutrition Survey
ToR	Terms of reference
TRG	TOMAK Reference Group
VC	Value chain
VfM	Value for money
VSLA	Village Savings and Loans Activities
WEE	Women's economic empowerment
WFP	World Food Program
WSS	Water supply & sanitation

Executive Summary

The *To'os Ba Moris Diak* (TOMAK) Program is a 5-year agricultural livelihoods program funded by the Australian government in Timor-Leste. TOMAK's goal is to ensure rural households live more prosperous and sustainable lives. TOMAK will achieve this through parallel and linked interventions that aim to: (i) establish a foundation of food security and good nutrition for targeted rural households, and (ii) build their capacity to confidently and ably engage in profitable agricultural markets. TOMAK adopts a nutrition sensitive agriculture (NSA) approach, including a focus on social behaviour change communication (SBCC), in its efforts to improve food security and nutrition.

TOMAK's Inception Phase commenced in June 2016 and will run through mid-2017. Its focus is on program establishment, developing a more detailed design, and identifying major field activities. Implementation of field activities will commence in the second half of 2017. To develop a more detailed design of TOMAK's NSA component, three foundational assessments were carried out. This Food Consumption Survey is the first of the three assessments. The assessment had three main objectives: (i) to explore most commonly consumed foods in the TOMAK implementation areas, including information on seasonal differences; (ii) to identify under-utilised food sources that could potentially contribute to improvements in nutrition for TOMAK's target beneficiary population; and (iii) to identify practices around household food sharing and decision-making processes in the household that might be relevant to the design of TOMAK interventions.

The assessment utilised a combination of focus group discussions (FGDs) and key informant interviews (KIIs).

Based on the secondary data analysis and the field assessment, major conclusions are as follows:

- A universal solution to dealing with all the beliefs across different locations is unlikely. This assessment found a range of misconceptions and beliefs about different foods. CD-NIP further noted that beliefs varied from one place to another. This phenomenon suggests a universal solution to dealing with all misconceptions and beliefs across different locations is unlikely.
- Local leaders almost agree that malnutrition in Timor-Leste is pervasive and that government should pay more attention to the problem, although one dissenting leader argued that, genetically, Timorese are short and thin.
- Food and hygiene are considered the two most important factors contributing to infant and child malnutrition. Health workers interviewed appeared to have a better understanding of nutrition-related problems, especially for children 6-23 months, giving the following main reasons: (i) children are mainly fed plain rice porridge; and (ii) diarrhoea is especially common among infants and children as they play on the ground which is contaminated with animal faeces.
- Overall, it was agreed by most participants that both pregnant women and lactating mothers need to eat better quantity and quality of foods.
- Food instability a significant problem. Both FGD participants and key local nutrition actors identified the lack of consistent, year-round availability and access to nutritious foods (e.g. vegetables) as a major limiting factor to nutrition. The government's quarterly distribution of safety net payments were cited as opportunities for households to purchase nutritious foods in the off season, if they were available.
- Families demand vegetables, but cannot always access them. Rice or maize with one type of vegetable dish was cited as a 'normal diet' for both lunch and dinner during FGDs; as well as in the CD-NIP and COMPAC-TL reports. Both men and women participants stated that the vegetable played an important role during these meals. They deemed the availability or accessibility of vegetables crucial.
- Current popular vegetables. Papaya and pumpkin leaves or flowers, cassava leaves, cabbage and bok choy are among popular home-produced or locally-sourced vegetables.
- Fruits are a missed opportunity. During women FGDs, there was strong emphasis that fruits are in general 'good for the mother and the baby inside the womb'. Pomelo (jambu), jackfruit and grapefruit are available but people do not prefer them. Farmers produce rock melons and other horticulture products but these

were mostly utilised for income generation. According to some FGD participants, the best thing about fruits is that they are 'less seasonal than other crops'.

- The supply of nuts and legumes/ beans is seasonal. Households prefer to eat these important protein sources, but due to low productively and premature spoilage they are available only seasonally.
- Breakfast is less important. In general, adults reported breakfast as being less important than lunch and dinner.
- Women's time-poverty directly affects nutrition. Women's time-poverty, especially during the land preparation and planting seasons, means they cannot spend much time preparing more nutritious meals. TOMAK should prioritize food preparation strategies that are quick but also maintain the nutritional content of foods being prepared.
- …because it tastes delicious, is affordable and can be cooked very easily. Women in Bobonaro and Viqueque clearly expressed their preference to cook rice than prepare maize. They cited rice as easier and quicker to prepare. In local markets, rice also costs less than maize. This was also a common justification provided as to why mothers rely heavily on noodles, and noodles with rice.
- Reliable but boring foods. Less preferred crops like cassava, sweet potatoes, and taro (and sago in Bobonaro) are usually prepared and served only as plain boiled foods. Unlike rice and maize, they are not prepared in combination with other foods like vegetables. Many of these less preferred crops are very reliable in terms of their availability and accessibility.
- Processed food confusion. Households' nutritional knowledge of imported frozen broiler chicken, condensed milk, instant noodles and white rice were heavily influenced by marketing information and rumour, not nutritional facts. Not only did women demonstrate not being aware of the long-term negative effects of monosodium glutamate (MSG) and condensed milk, they reported perceiving the opposite: that it contains different nutritious products, including meats, as reflected in TV advertising and packaging.
- Government's subsidy of white rice is interpreted as endorsement of rice as a nutritious food.
- Spicy, hot and bitter equals unhealthy. Chilli and papaya leaves and flowers were considered unhealthy foods by the majority of FGDs because they are spicy, hot and/or bitter. The belief is that they lead to constipation, diarrhoea, or other stomach problems when too much is consumed.
- 90% of respondents would eat fish if available. The COMPAC-TL baseline specifically found that over 90% of survey respondents noted the ability to produce their own fish would be the main driver to increase household fish consumption. Currently only few households in TOMAK's target areas have access to fish.
- Food production must have a business plan. Numerous suggestions and cautionary examples were provided illustrating the point that supporting production of nutritious foods must also be income-generating. Both religious and local leaders saw this as key to attracting young people to farming. However, caution needs to be exercised to also include compelling home consumption messages so all the nutritious food is not all sold resulting in continued malnutrition.
- Government-with-Government coordination and collaboration necessary. While SISCas were frequently viewed as the main nutrition communication outreach mechanism, nutrition officers noted that SISCas exclusively focus on food utilisation, hygiene and sanitation issues, but not on the production of nutritious foods. Feedback was therefore strong that PSF and SISCa should be linked to Ministry of Agriculture and Fisheries (MAF) extension workers to improve intake of nutritious foods by households.

Based on the conclusions from the secondary data analysis and this assessment, recommendations for TOMAK include:

1. **Identify barriers to information utilisation**. Most of the key local nutrition actors spoken to argued that caregivers were provided with large amounts of information around better nutrition and hygiene, but they do not seem to put this knowledge into practice. For TOMAK to be different and generate impact, it needs to figure out how to take this situation and turn it into the desired results. Targeted formative research (i.e. barrier analysis) used to design SBCC strategies and focused, specific behaviour-targeting 'designing for behaviour change' (DBC) methodologies may prove highly effective. This was the case for Mercy Corps' COMPAC-TL program.

2. **Address key misconceptions**. The assessment identified a number of key nutrition-related misconceptions that should be tackled. Some of these are best be summarized in the following statements generally heard during FGDs:
    - White rice must be good because why else would government subsidise it?
    - Monosodium glutamate (MSG) must be good for you because its advertising says it has protein and vegetables in it.
    - Of course condensed milk is milk. It says it in the name.
    - I do not care that imported chickens are more affordable, I hear that they are full of medicine which surely is not good for me.
    - Breakfast is not an important meal.
3. **Improving cooking practices may make a big difference**. The assessment produced a number of key findings about cooking: (i) women do not have time to cook long, nutritious meals; (ii) reliable foods are prepared in a very boring way (i.e. cassava without vegetables); and (iii) tasty, affordable, quick foods are preferred. These findings point to the need for TOMAK to 'get in the kitchen' and cook up some smart, nutritious solutions, *and to* then use effective DBC and SBCC strategies to ensure their uptake. Findings from the Information Consumption Survey identified other rapid changes happening in the kitchen (i.e. use of electric cooking technologies) which may be creating critical innovation windows in family kitchens – which tend to be very traditional and culturally locked-in spaces.
4. **Focus on the availability (supply) of vegetables and fish, as demand is already there**. This assessment found a surprisingly high level of existing demand for vegetables and fish. However, supply of both is extremely limited. For vegetables, year-round supply was a particular frustration. Therefore, TOMAK could confidently focus on activities that improve the reliable, year-round supply of fish and vegetables. Papaya and pumpkin leaves or flowers, cassava leaves, cabbage and bok choy are reportedly popular, home-produced or locally-sourced vegetables.
5. **Climate- and gender-smart agriculture is critical**. Tied to both the gender time-poverty and vegetable demand opportunities noted in the previous two recommendations is the need for solutions to be both climate- and gender-smart. By this, it is meant that nutrition-sensitive agricultural systems should aim to increase productivity first, ahead of expanding production. Increasing productivity typically means getting greater use out of a limited amount of resources (i.e. water, land, labour etc). This tends to be both climate-smart and places less of a burden on already stretched time availability of women – as opposed to putting more land under production which tends to consume more time, land and water. In addition, TOMAK needs to look at interventions close to the home – again so as to not further over-burden women and other primary child caregivers. Considering the ample amount of evidence already at hand in Timor-Leste, TOMAK should therefore consider supporting systems such as keyhole gardening (KHG), integrated fish farming (IFF), inter-cropping/conservation agriculture (CA), and less proven activities like household chicken/ egg production.
6. **Develop modular business plans for NSA systems**. As noted above, supporting production of nutritious foods must also be income-generating. TOMAK must invest in testing and teasing out modular business models to accompany its NSA interventions. Fortunately, for KHGs and IFF these already exist for the Timor context. However, caution needs to be conveyed to also include compelling home consumption messages so all the additional nutritious food produced is not all sold, resulting in continued malnutrition; and income from sales is reinvested in healthy family outcomes.
7. **Storage solutions for legumes and nuts**. Households already prefer to consume these important protein sources, but due to low productively and premature spoilage (as high as 30%), they are available only seasonally. Therefore, TOMAK should focus on promoting ways to preserve and prolong the seasonal availability of legumes and nuts. Where possible, such solutions should be promoted through the private sector – ideally replicating the success of Mercy Corps' silo seed grain storage approach. To date this has

seen over 50% of all rural households adopting this technology, with over 45,000 households paying full price for it.

8. **Support government-to-government NSA coordination and collaboration**. As found during this assessment, there is a need for more functional bridges between the government's Ministry of Health (MoH) and Ministry of Agriculture and Forestry (MAF). This was particularly true around the need for households' to understand ways to address under-nutrition through their own farming practices. Therefore, it is recommended that TOMAK use nutrition-sensitive agriculture (NSA) approaches as a functional bridge, adapting NSA approaches to the Timor context, formalising the result into a manual targeting both MoH and MAF decision-makers as well as frontline extension staff, and then delivering applied training for both groups. It may be more effective to have both MAF and MoH staff participate in the same training. Local NGOs and other stakeholders may also be considered for inclusion.
9. **Additional research – household decision-making**. While a number of household-level issues were identified during this assessment, the assessment itself did not thoroughly investigate the household-level dynamics contributing to why information received has not been translating into the desired actions. Additional research into this area should be closely coordinated with the formative research proposed in the first recommendation.

Main Report

1. Introduction

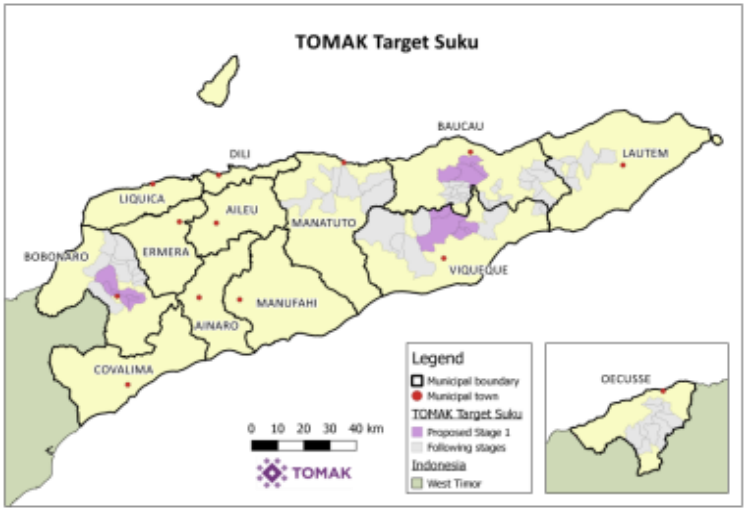
1.1. Background

The *To'os Ba Moris Diak* Program (TOMAK) is a A$25 million, 5-year agricultural livelihoods program funded by the Australian government in Timor-Leste. Its goal is to ensure rural households live more prosperous and sustainable lives. TOMAK will achieve this through parallel and linked interventions that aim to:

- Establish a foundation of food security and good nutrition for targeted rural households.
- Build their capacity to confidently and ably engage in profitable agricultural markets.

As set out in the *Investment Design Document* (IDD), TOMAK will adopt a nutrition sensitive agriculture (NSA) approach in its efforts to improve food security and nutrition. TOMAK will work on both the supply and demand sides of nutrition. On the supply side, it will aim to improve the supply and availability of nutritious food. On the demand side, TOMAK will work to influence nutrition-related knowledge and behaviour of target households through social behaviour change communication (SBCC) approaches. To build the capacity of target households to engage profitably in agricultural markets so as to increase household incomes, TOMAK will develop value chains (VCs) that are assessed to have high commercial potential. TOMAK will emphasise application of the making markets work for the poor (M4P) approaches.

Figure 1: TOMAK target communities



TOMAK's primary target area as defined in the IDD comprises inland (non-coastal) suku that have reasonable agricultural potential. Agricultural potential was defined as access to irrigation resources. This zone[1] includes 70-80 suku (villages). They are located in three clusters: (i) the Maliana basin (including most of Bobonaro municipality); (ii) the eastern mountain regions (including large parts of Baucau and Viqueque municipalities and parts of Lautem and Manatuto); and (iii) Oecussi municipality.

Adam Smith International (Australia) Pty Ltd (ASI), in partnership with Mercy Corps, was awarded the contract for management of TOMAK in May 2016. Core staff were mobilised to Dili at the beginning of June 2016 to commence start-up of TOMAK's one-year Inception Phase.

As specified in the contract, TOMAK's Inception Phase will run through mid-2017. It will focus on program establishment, developing a more detailed design, and identifying major field activities to commence in 2017.

To enable development of a more detailed design for TOMAK's NSA component, three foundational assessments were carried out. This Food Consumption Survey was the first of the three assessments. It focused on drawing out information around variations of household diets due to seasonality and special

[1] Identified in the IDD as the 'Inland Irrigable Watersheds' Zone (IIWZ).

occasions, as well as gaining a better understanding of household and individual beliefs and misconceptions around foods consumed.

The assessment was largely built on a review of existing secondary data, supplemented with a field survey to fill identified knowledge gaps. The field assessment comprised a combination of focus group discussions (FGDs), key informant interviews (KIIs) and surveys aimed at developing a better understanding on food consumption dynamics related to improving households' nutritious food intake, especially for the most vulnerable groups of children under-5 years of age and pregnant and lactating women.

The findings are being be used by TOMAK to develop a theory of change to trigger household demand for year-round production and utilisation of diverse and sufficient foods.

1.2. Objectives

Establishing a foundation of food security and good nutrition requires stimulating household demand for year-round production, purchase and utilisation of nutritionally diverse and sufficient foods. To effectively stimulate this demand, TOMAK needs to understand the demographic profile of its target beneficiaries and the context in which choices are made around nutrition. With this information, TOMAK will be able to design and invest in both NSA and SBCC interventions.

The specific objectives of the qualitative food consumption survey were to:

- Explore most commonly consumed food in the TOMAK implementation areas, including seasonal differences and sources of food consumption;
- Identify under-utilised food sources that could potentially contribute to improvements in nutrition; and
- Identify practices around household food sharing and household decision-making processes.

Table 1: Number of FGD Participants

Cluster	Suku	FGD Type	Number of Participants
Maliana Basin	Purugua	Female	5
			6
	Raifun	Male	6
			12
West Viqueque/ Baucau	Buidau	Female	6
			6
	Gariuai	Male	7
			7
East Viqueque/ Baucau	Vagia	Female	8
		Male	7

2. Methodology

Recognising past and ongoing assessments by stakeholders in Timor-Leste, which have established a significant body of evidence on food insecurity and malnutrition, this assessment commenced with an analysis of secondary data. This desk study aided in further focusing the field assessment and arriving at relevant assessment questions. Initially, data collection was planned via household surveys. However, due to the richness of information already available on food availability, accessibility and utilisation as well as recommended interventions (see section 3), the methodology for the field assessment focused on digging deeper into specific topics and questions as set out in section 4.

Using a pile-sorting technique, participants in each FGD were asked to classify foods into three groups. This enabled the surveyor to get a better sense of participants' understanding on nutritious and unhealthy foods, for household members in general and more specifically for pregnant women, lactating mothers, and children 6-12 months.

The pile-sorting started with a group exercise. Participants were asked to group pictures of locally available or accessible foods into three categories: nutritious, less nutritious, and unhealthy foods for household members

in general. Based on each group's responses, discussions were initiated to enrich information collected and to clarify categorisation. Once finished with this grouping, the participants were then asked to regroup the foods into similar categories but this time for: (i) pregnant women; (ii) lactating mothers; and then (iii) 6-12 month old children.

This process aimed at developing a better understanding of men's and women's perceptions around a wide variety of foods, but was not designed to unveil underlying behaviour determinants hindering adoption of specific nutrition-related behaviours. The latter will need to be further explored through a more comprehensive formative research process (e.g. through Barrier Analysis), influencing factors related to particular behaviours are better understood.

Prior to going to the field, the TOMAK and the assessment teams identified 'key local nutrition actors'. These were persons perceived as being central to improving the household practice related to the consumption of nutritious foods. The key local nutrition actors identified were Ministry of Health (MOH) municipality nutrition officers, non-governmental organization (NGO) nutrition officers, the government's Family Health Program *Programa Saude Familia* (PSF) Volunteers, Ministry of Agriculture and Forestry (MAF) extension workers, religious leaders, and other local leaders. Interviews were aimed at understanding their perspectives on the extent of malnutrition problems and inputs to improve the nutrition situation at household level.

Rational for geographic locations: Following the program targeting logic, the survey was conducted in 3 municipalities within the initial TOMAK priority implementation areas, including: (i) Maliana Basin in Bobonaro Municipality; (ii) West Viqueque-Baucau Municipalities; and (iii) East Viqueque-Baucau Municipalities. Each geographic area is representative of distinct, homogeneous socio-cultural practices. Clustering of the assessment participants was focused around these regions.

Ethical Clearance: Clearance was gained from the *Instituto Saude Nasional* (INS) with permission also obtained from local authorities including the municipal administration, *postu adminitrativu* (sub-district), and the suku (village). Participation was voluntary. Respondents were questioned only after they gave their informed consent. All data was treated in confidence and used only for the purpose of this study.

3. Secondary Data and Information

The nutrition situation in Timor-Leste has recently attracted heightened attention from government and its development partners. In recent years, multiple studies aimed at better understanding the scale and urgency of the situation have been completed. Four of these studies were reviewed in detail in the course of completing this assessment, and used to help define the scope of the field assessment. The four studies analysed where:

- Timor-Leste Food and Nutrition Survey (TLFNS) – Ministry of Health; 2013.
- Baseline and Endline Surveys Combatting Malnutrition and Poverty through Inland Aquaculture in Timor-Leste (COMPAC-TL); Mercy Corps, Hivos, WorldFish; 2013 and 2016.
- Malnutrition in Timor-Leste: A review of the burden, drivers, and potential response; The World Bank; 2016.
- Baseline Report Community Driven Nutrition Improvement Program (CD-NIP); Catholic Relief Services (CRS); 2015.

Further detail is provided in Appendix 5.

4. Research Questions

Responding to the terms of reference developed by TOMAK, the following research questions were developed by Mercy Corps. The research questions were discussed and approved by TOMAK:

1. **How do seasonality and special occasions affect food consumption?**

- How does the type of foods consumed vary during normal periods versus during the lean season versus special occasions?

- How consistently are the foods consumed across different geographic locations and groups of consumers (sex and age)?
- What types of nutritious foods are generally missing from a normal diet? Are the nutritional gaps different from place to place?
- What should TOMAK's interventions focus on in terms of the type of foods to promote, and how to promote them?

2. To what extent do women and men have different perceptions around different foods?

- What foods are considered to be nutritious, less nutritious and unhealthy?
- Are there any trends regarding what foods are considered to be nutritious (or not) across different demographic profiles within a household?
- Are there any misconceptions around the nutritional content of foods? Are these conceptions consistent across different locations and sex groups (women versus men)?
- What foods are preferred? How do these preferences differ across different demographic profiles within a household?
- What should TOMAK do to address gaps in understanding or misconceptions around foods?

3. How do key local 'nutrition actors' (i.e. health/extension workers, local/religious leaders, etc) see the prevalence of malnutrition problems, and how do they respond?

- To what extent do these key local actors understand the magnitude of malnutrition issues within the communities where they are working?
- How do their perceptions around nutrition conditions differ? What are the reasons for these contrasts?
- What should TOMAK do to work with these leaders to improve nutrition status of their communities?

5. Findings and Discussions

Findings are presented into three sections as per the assessment questions above: (i) effects of seasonality and special occasions on food consumption; (ii) households perceptions around foods; and (iii) key 'local nutrition actors' perceptions around malnutrition issues.

"It would be very good if we can produce vegetables year-around and not only during its season."

A man in Baucau

5.1. Effectives of seasonality and special occasions on food consumption

5.1.1. What is considered a normal household diet?

Lunch and Dinner:

Across different locations and profiles of FGDs, rice or maize with one type of vegetable dish was cited as a 'normal diet.' This arrangement was reportedly served on a regular basis for both lunch and dinner. This finding is consistent with findings from both the CD-NIP and COMPAC-TL Reports. During FGDs, both men and women participants agreed that the vegetable played an important role during these meals. Therefore, the availability or accessibility of vegetables was deemed crucial.

Papaya and pumpkin leaves or flowers, cassava leave, cabbage and bok choy are among popular home-produced or locally sourced vegetables.

Rice has been gaining popularity in recent years across Timor-Leste. Among FGD participants, children were reported to be more familiar with 'rice taste' than maize.

"Children nowadays eat more rice than maize. They will complain when maize is served repeatedly."

A mother in Baucau

As a result, families shifted from maize to more rice-based meals. Women in Bobonaro and Viqueque clearly expressed their preference to cook rice than prepare maize. They cited rice as being easier and quicker to prepare. In local markets, rice also costs less than maize.

In general, foods are consumed together with everyone gathered at the table before lunch or dinner starts. In general, men were reported to get food first with women the last to do so. However, male FGD participants argued that despite being the first person to take food they would only take a moderate portion to ensure that everyone received their equal portion. Interestingly, women FGDs across all three target areas reported that babies and children were frequently fed first. By doing so, mothers could eat together with others.

For the majority of FGD participants, lunch and dinner are prepared before lunch, and would be warmed and served again in the evening for dinner.

Breakfast:

In general, adults reported breakfast as being less important than lunch and dinner. A male FGD participant in Bobonaro related that children are sent to school so that they can eat 'better foods' provided by the school.

"Children will eat whenever they are hungry and ask mother to give foods. Baby will also usually eat first so that mom and dad can eat together after that."

A mother in Viqueque

In all FGDs, participants noted local bread (*paung*) and boiled cassava, sweet potatoes, taro or banana are common breakfast foods. Coffee or tea served with sugar was mainly for adults only. Children usually drink water.

Unhealthy foods:

Monosodium glutamate and condensed milk were cited frequently as commonly used ingredients but awareness that these were in fact unhealthy foods was almost not existent. Instant 'magic' ingredients containing mostly monosodium glutamate (e.g. Masako) were commonly cited as being used when preparing vegetables. Women's FGDs across all 6 communities reported that they were not aware of the long-term negative effects of monosodium glutamate. Instead, they reported perceiving the opposite: that it contains different nutritious products, including protein, as seen in TV advertising and on packaging.

Women also stated that condensed milk would be made available and is provided to children after the harvest or other times when women have money. Condensed milk was considered a luxury drink by most respondents. But misconceptions around the health value of condensed milk were high, as was the under-valuing of fresh milk.

5.1.2. Seasonality and food consumption

The 'difficult time' or 'lean season' describes the period between land preparation and harvest, or when prolonged drought or extended rainy seasons occur. This is due to two main factors: (i) food reserves have run low; and (ii) less time available to prepare foods because families, men and women together, are working on the farm for most of the day. Women will help men on the farm more when stored grains run out. As a result, simpler foods are prepared. These meals are mostly prepared in the farm. Examples of these meals are boiled cassava or sweet potatoes with coffee or tea.

"The best thing about fruits is that they are less seasonal than other crops."

FGD participants

Whenever available – mostly from own gardens – fruits like papaya, banana, pumpkin are utilised. Other nutritious fruits like pomelo (jambu), jackfruit or grapefruit[2] are less popular and therefore underutilised. In Bobonaro FGDs, participants reported farmers producing rock melons and other horticulture products with help from an NGO, but these were mostly sold. In Baucau, participants mentioned producing tomatoes, chillies and other horticulture products during dry season, but again mainly for sale.

Some FGD participants argued that the best thing about fruits is that they are 'less seasonal than other crops'.

[2] http://www.onegoal.org/12_foods_helping_kids_fight_malnutrition_in_asia

Legume beans and nuts are generally only available during and for a short period after harvest time. Some participants reported being able to store and use legume beans or nuts for longer than other participants. In Viqueque and Bobonaro, during the harvest season legume beans were served more regularly. However, this still only lasts for around three or four months after harvest. In most cases, legume beans are mixed with maize and/or green leafy vegetables to make a 'favourite meal' (*batar da'an*).

The FGDs confirmed other assessments that cassava, sweet potatoes, and taro (and sago in Bobonaro) are less preferred foods, and are consumed mainly during the lean season. They are usually prepared and served as plain boiled foods without any combination of other foods especially vegetables. The latter are usually served together with rice or maize. Many of these less preferred crops are very reliable in terms of availability and accessibility.

5.1.3. Protein intake and ceremonies

Across all FGDs, it was confirmed that animal protein (i.e. eggs, chicken, beef and pork) is rarely consumed. Plant protein was mentioned in all FGDs. Fish was only mentioned in Baucau and Viqueque FGDs, and only by a few participants. This is consistent with TLFNS and other reports. The COMPAC-TL baseline reported that when asked about what would increase household fish consumption, over 90% of survey respondents noted the ability to produce their own fish would be the main driver.

Men in Baucau and Bobonaro expressed the view that, compared to previous years, there is a noticeable increase in consumption of imported frozen broiler chicken, condensed milk, instant noodles and canned fish. Buying and consuming such products are most common after quarterly distribution of government social safety net cash payments.

There is an extensive misconception around imported chicken. It is clear that local, free range chicken meat is preferred.

"Shall we reduce traditional ceremonies when (it) provides sources of (animal) protein for us?"

A father in Purugua, Bobonaro raised his concern following a suggestion given by local government officials and religious leaders that community members should limit the number of ceremonies/parties

Various other meats (e.g. pork, beef, goat, and chicken) are served only during ceremonies. The majority of both men and women FGD participants across the different areas deemed ceremonies to be the times when they will have such foods. However, everyone also agreed that such ceremonies drain household financial reserves.

5.2. Household perceptions around foods

5.2.1. General perceptions and beliefs

During the piling exercises, participants seemed to possess a good general understanding of which foods are nutritious and not nutritious, although important misconceptions and beliefs persist. Participants across both genders and all locations easily determined that soft- and alcoholic-drinks, cigarettes, coffee and tea, and betel nuts are amongst unhealthy ones. They also quickly identified different meats, fish, as well as nuts, legume beans, tempeh and tofu as nutritious foods.

"Beliefs varied one place to another. This phenomenon suggests a universal solution to dealing with all the beliefs within different locations is unlikely."

CD-NIP report

However, when further explored there are range of misconceptions and beliefs about different foods. The CD-NIP further reported that beliefs varied one place to another. This phenomenon suggests a universal approach to dealing with all beliefs and misconceptions across different locations is unlikely. Some of the beliefs and misconceptions that this assessment identified are discussed below.

Condensed milk was always picked by both male and female FGD participants across all three municipalities as one of the most nutritious first foods or drinks. This remained the case even when compared with fresh milk. Only in Viqueque was fresh milk posted into the nutritious foods/drinks category. Due to condensed

milk's colour, as well as influence from TV advertisements promoting this product, condensed milk was repeatedly perceived as a 'very healthy' drink when in reality it consists mostly of sugar with little milk.

Rice, both white and red, was considered to be a nutritious food. Red rice was perceived as more nutritious than white. However, most FGD participants struggled to understand different carbohydrate foods and associated nutrient content. For example, in six FGDs rice was considered to be nutritious but maize, bread and noodles were not. In almost all FGDs, rice was perceived to be more nutritious than maize. When asked why, the answers were varied from 'rice tastes better' to because rice is somehow promoted (subsidised) by the government, it must be good for you.

"Noodles are not very nutritious, but we like to eat them and prepare them with rice because it tastes delicious, is affordable and can be easily cooked"

Common reframe from FGD participants when trying to understand why families cook foods they know are not so healthy

Imported frozen chicken meat received the opposite bias. The majority of both male and female FGD participants responded that imported frozen chicken is an unhealthy product. They cited a perception that it contains 'chemical products'. When further probed what these products are, there was no clear explanation provided except that it was said to contain '*ai-moruk*' (medicine). No one mentioned having any issue in the past after consuming frozen chicken. However, observations by the assessment team at kiosks selling frozen fish suggested that frozen chicken, like most other foods, is poorly transported and handled.

Chilli and papaya leaves and flowers were considered unhealthy foods by the majority of FGDs. During subsequent discussions, it was revealed the main reason was simply because they are spicy, hot and/or bitter. The conclusion was that this results in intestinal distress, and is believed to lead to constipation, diarrhoea, or other stomach complaints when too much is consumed.

The majority of FGD participants seemed aware that instant noodles are not very nutritious, especially if cooked without any additional nutritious foods. Nonetheless, noodle consumption was reportedly quite high. In most cases, instant noodles were reportedly served with rice – another carbohydrate. When asked why, respondents stated because it tastes delicious, is affordable and can be cooked very easily.

5.2.2. Beliefs around nutritious foods for children 6-23 months of age

Consistent with other study findings, a wide range of beliefs among different FGD locations regarding foods for children 6-23 months of age was reported. CD-NIP cited that '*beliefs specific to young children and breastfeeding mothers tend to be fewer and generally less obscure. Most responses were based around not feeding 'hard' foods such as corn, cassava and (non-porridge) rice to avoid constipation, and around foods believed to cause allergic reactions, coughing and stomach aches, in particular the leaves of papaya trees and pumpkin vines*'. FGD participants also expressed similar beliefs across all geographic areas and sexes.

In addition, two women's FGDs in Bobonaro identified eggplants, cabbage, taro, mango and tangerine as not good for children 6-23 months. Meanwhile, male groups in Baucau argued that papaya and taro should not be provided to children because they will make the children feel itchy. Tomatoes, potatoes, cassava, mustard, pumpkin flower, and French beans were also reported as not being good for children because they can cause stomach aches.

Even foods like eggs, many nuts, legume beans, green leafy vegetables, tempeh and tofu were reportedly perceived as not very nutritious for children 6-23 months of age. This was surprising as the FGDs otherwise identified these foods as nutritious for household members in general.

When asked what they believed are preferred and essential foods for young children, many FGD participants across all locations agreed rice porridge – sometimes mixed with instant noodles or vegetable soup – is a preferred and essential food for young children. From the FGDs, it was concluded that the softness of foods is more important than other qualities when it comes to infant feeding.

Concerning children aged 12-23 months, the CD-NIP argued '*there was an element of importance to age milestones, with a number of beliefs "expiring" around the 12-month mark*'. Nevertheless, messaging around the importance of adding nutritious, soft foods into young children's food is needed – especially as this age group is considered the most vulnerable in terms of nutrition status, as reported by the TLFNS and others.

5.2.3. Beliefs around nutritious foods for pregnant women and lactating mothers

With the women's FGDs, there was strong emphasis that fruits are in general '*good for the mother and the baby inside the womb*'. The main reason cited was because fruits contain vitamins and other nutrients. However, for lactating women there was some contradiction in answers provided by different FGDs. For example, two women's FGDs in Bobonaro mentioned that fruits are important and necessary for lactating women, while male FGDs in Baucau disagreed saying fruits are dangerous for lactating women as they reduce production of breast milk.

"The softness of foods is more important than other qualities when it comes to infant feeding."

Conclusion from FGDs across all geographies and sexes

Many respondents mentioned that, due to risk of miscarriage, chilli and papaya flower and leaf are forbidden during pregnancy. But overall, it was agreed that both pregnant women and lactating mothers need to eat more and better quality foods.

When asked what kinds of foods they believe assist lactating mothers to produce more breast milk, participants picked nuts, legume beans, rice and maize. While nuts and legume beans will help to increase breast milk, consumption of rice and maize is unlikely to do so.

Meats, fish and local chicken were among preferred foods by respondents when they have money.

When respondents were asked if women eat more than men, some participants mentioned that that was not the case for 'normal' women. But, in the case of pregnant and lactating women, they eat more than other household members. However, frequency and quantity was generally prioritised over quality for pregnant women.

5.3. 'Key Local Nutrition Actors' perceptions around malnutrition

5.3.1. Perceptions of local actors around prevalence of malnutrition in their communities

With the exception of one local leader, all interviewed respondents agreed that malnutrition in Timor-Leste is pervasive and government should pay more attention to the problem. The dissenting leader argued that genetically Timorese are short and thin.

Interviewed health workers appeared to have a better understanding of the issues. Most identified malnutrition as very problematic, especially for children 6-23 months. They strongly believed food and hygiene are the two most important factors contributing to infant and child malnutrition. They gave reasons including: children are mainly fed plain rice porridge; and diarrhoea is especially common among infants and children as they play on the ground that is dirty and contaminated with animal faeces.

Both health workers and religious leaders argued that many malnutrition and health problems are related to parents' lack of awareness of the importance of nutrition, especially for children. In Baucau, one health worker provided an example stating '*sometimes after plumpynuts (therapeutic foods) are provided and nutrition status is restored, parents do not continue providing suggested nutritious foods to their children. As a result, their children come back to us with malnutrition problems again*'.

Homemade oral rehydration salts (ORS) given to someone with diarrhoea and the free vitamins provided by government were also identified as important ways to address malnutrition in infants and children.

MAF extension workers confirmed that seasonality of household food production impacted the ability of households to consume foods year-round. As a result, households experience an inability to consistently maintain food diversity. The MAF extension workers also identified broken-down irrigation systems and the lack of good farming practices and inputs as contributing to low food productivity. Local leaders and extension workers noted the severity of the prolonged drought due to *El Nino* severely impacting agriculture production.

5.3.2. Community engagement to improve nutrition

For health workers, the government's community health system or *Sistema Integradu Saude Comunitaria (*SISCa) is a major nutrition communication outreach mechanism. All interviewees agreed that SISCa is where rural households currently access nutrition services. SISCa serve all community members, especially children under-five, PLW, and school children. SISCa services are provided once a month at the suku level.

> **"As a PSF Volunteer, I need to be proactive to actively encourage community members to participate in SISCa, otherwise they will not come."**
>
> *PSF Volunteer*

Interviews with Municipal Nutrition Officers across all three areas stated that community interest to participate in SISCa outreach services is relatively high. They also agreed that whenever participating, community members pay close attention to health and nutrition information provided by health workers.

However, health workers pointed to two main challenges within the health and nutrition SISCa system: (i) lower participation than is required/ desired; and (ii) messages are not getting through.

Service provision once a month was not considered to be enough. Some nutrition extension workers stated that sometimes parents are not available during scheduled SISCa times. A PSF volunteer mentioned that, as a PSF, she needs to be proactive to encourage community members to participate in SISCa, otherwise they will not come. When further asked what to do to improve community awareness on nutrition, a health worker proposed increasing the number of SISCa sessions to weekly, or undertaking household visits.

People seem unwilling to practice what they are told. Most of the key actors stated that they are not so sure why. Despite all the information provided and other campaigns, malnutrition remains high. One of health workers expressed her concern that '*information and motivation of healthy lifestyles is always provided, but the majority of people are not following the advice provided. Books and brochures are provided and handed over to community members to share information. However, people's awareness about health and nutrition in general is still low malnutrition situation looks like the same, despite information having been provided repeatedly*'.

In addition, Nutrition Officers interviewed in Bobonaro and Baucau specifically pointed out that SISCa's exclusive focus is on food utilisation, hygiene and sanitation issues, but not on nutritious food production by the household.

Health workers thought that all family members need to be targeted to participate in SISCa events so that everyone is aware the importance of health and nutrition. Those who actively participate in SISCa seem to be healthier. Some parents who are busy with their farming sometimes do not have time to take care of their children especially during the planting season, let alone have time to attend SISCa events. Family planning was another measure suggested for enabling mothers to have more time to take care of their children, including bringing them to SISCa.

5.3.3. Coordination and collaboration

Improving Government-with-Government and Government-with-NGO coordination and collaboration was frequently reiterated by interviewees. Feedback included linking PSF and SISCa to MAF extension workers to improve household intake of nutritious foods. One health worker interviewed noted that, in Viqueque, an initiative to work together with MAF extension workers resulted in the promotion of household vegetable gardening.

For NGO health workers interviewed in Baucau, the outreach mechanism being used included both SISCa and mother supports groups (MSGs). These MSGs exist to assist pregnant and lactating women. MSGs do not necessarily formally interact with SISCas.

5.3.4. Other significant information gathered

Interviews with religious and local leaders pointed out the need to engage with youth to help improve household food and nutrition security. However, MAF extension workers expressed concerns about the willingness of young farmers to increase production, especially of nutritious foods. The main reason they gave

was the uncertainty around profitability, though they noted large amounts of underutilised land. Therefore, promoting a balance between income and consumption objectives is critically important in relation to improving nutrition.

An extension worker in Baucau provided a cautionary example. He stated that his suku was one of main producers of tomatoes a few years back. However, the price of tomatoes has declined recently due to oversupply during harvest time. As a result, farmers are not willing to grow them anymore.

A local leader interviewed in Viqueque mentioned that land tenure is another major problem in his area. When probed as to how community members could increase their production of nutritious food, he suggested this should be focussed around the house, and should focus on short-term crops like vegetables.

6. Conclusions

Based on the secondary data analysis and the field assessment, major conclusions are as follows:

- A universal solution to dealing with all the beliefs across different locations is unlikely. This assessment found a range of misconceptions and beliefs about different foods. CD-NIP further noted that beliefs varied one place to another. This phenomenon suggests a universal solution to dealing with all misconceptions and beliefs across different locations is unlikely.
- Local leaders almost agree that malnutrition in Timor-Leste is pervasive and that government should pay more attention to the problem, although one dissenting leader argued that genetically Timorese are short and thin.
- Food and hygiene are considered the two most important factors contributing to infant and child malnutrition. Health workers interviewed appeared to have a better understanding of nutrition-related problems, especially for children 6-23-months, giving the following main reasons: (i) children are mainly fed plain rice porridge; and (ii) diarrhoea is especially common among infants and children as they play on the ground which is contaminated with animal faeces.
- Overall, it was agreed by most participants that both pregnant women and lactating mothers need to eat better quantity and quality of foods.
- Food instability a significant problem. Both FGD participants and key local nutrition actors identified the lack of consistent, year-round availability and access to nutritious foods (e.g. vegetables) as a major limiting factor to nutrition. The government's quarterly distribution of safety net payments were cited as opportunities for households to purchase nutritious foods in the off season, if they were available.
- Families demand vegetables, but cannot always access them. Rice or maize with one type of vegetable dish was cited as a 'normal diet' for both lunch and dinner during FGDs; as well as in the CD-NIP and COMPAC-TL reports. Both men and women participants stated that the vegetable played an important role during these meals. They deemed the availability or accessibility of vegetables crucial.
- Current popular vegetables. Papaya and pumpkin leaves or flowers, cassava leaves, cabbage and bok choy are among popular home-produced or locally-sourced vegetables.
- Fruits are a missed opportunity. During women FGDs, there was strong emphasis that fruits are in general 'good for the mother and the baby inside the womb'. Pomelo (jambu), jackfruit and grapefruit are available but people do not prefer them. Farmers produce rock melons and other horticulture products but these were mostly utilised for income generation. According to some FGD participants, the best thing about fruits is that they are 'less seasonal than other crops'.
- The supply of nuts and legumes/ beans is seasonal. Households prefer to eat these important protein sources, but due to low productively and premature spoilage they are available only seasonally.
- Breakfast is less important. In general, adults reported breakfast as being less important than lunch and dinner.

- Women's time-poverty directly affects nutrition. Women's time-poverty, especially during the land preparation and planting seasons, means they cannot spend much time preparing more nutritious meals. TOMAK should prioritise food preparation strategies that are quick but also maintain the nutritional content of foods being prepared.
- …because it tastes delicious, is affordable and can be cooked very easily. Women in Bobonaro and Viqueque clearly expressed their preference to cook rice than prepare maize. They cited rice as easier and quicker to prepare. In local markets, rice also costs less than maize. This was also a common justification provided as to why mothers rely heavily on noodles, and noodles with rice.
- Reliable but boring foods. Less preferred crops like cassava, sweet potatoes, and taro (and sago in Bobonaro) are usually prepared and served only as plain boiled foods. Unlike rice and maize, they are not prepared in combination with other foods like vegetables. Many of these less preferred crops are very reliable in terms of their availability and accessibility.
- Processed food confusion. Households' nutritional knowledge of imported frozen broiler chicken, condensed milk, instant noodles and white rice were heavily influenced by marketing information and rumour, not nutritional facts. Not only did women demonstrate not being aware of the long-term negative effects of monosodium glutamate (MSG) and condensed milk, they reported perceiving the opposite: that it contains different nutritious products, including meats, as reflected in TV advertising and packaging.
- Government's subsidy of white rice is interpreted as endorsement of rice as a nutritious food.
- Spicy, hot and bitter equals unhealthy. Chilli and papaya leaves and flowers were considered unhealthy foods by the majority of FGDs because they are spicy, hot and/or bitter. The belief is that they lead to constipation, diarrhoea, or other stomach problems when too much is consumed.
- 90% of respondents would eat fish if available. The COMPAC-TL baseline specifically found that over 90% of survey respondents noted the ability to produce their own fish would be the main driver to increase household fish consumption. Currently only a few households in TOMAK's target areas have access to fish.
- Food production must have a business plan. Numerous suggestions and cautionary examples were provided illustrating the point that supporting production of nutritious foods must also be income-generating. Both religious and local leaders saw this as key to attracting young people to farming. However, caution needs to be exercised to also include compelling home consumption messages so all the nutritious food is not all sold resulting in continued malnutrition.
- Government-with-Government coordination and collaboration necessary. While SISCas were frequently viewed as the main nutrition communication outreach mechanism, nutrition officers noted that SISCas exclusively focus on food utilisation, hygiene and sanitation issues, but not on the production of nutritious foods. Feedback was therefore strong that PSF and SISCa should be linked to MAF extension workers to improve intake of nutritious foods by households.

7. Recommendations for TOMAK

Based on the conclusions from the secondary data analysis and this assessment, recommendations for TOMAK include:

1. **Identify barriers to information utilisation**. Most of the key local nutrition actors spoken to argued that caregivers were provided with large amounts of information around better nutrition and hygiene, but they do not seem to put this knowledge into practice. For TOMAK to be different and generate impact, it needs to figure out how to take this situation and turn it into the desired results. Targeted formative research (i.e. barrier analysis) used to design SBCC strategies and focused, specific behaviour-targeting 'designing for behaviour change' (DBC) methodologies may prove highly effective. This was the case for Mercy Corps' COMPAC-TL program.

2. **Address key misconceptions**. The assessment identified a number of key nutrition-related misconceptions that should be tackled. Some of these are best be summarised in the following statements generally heard during FGDs:
    - White rice must be good because why else would government subsidise it?
    - Monosodium glutamate (MSG) must be good for you because its advertising says it has protein and vegetables in it.
    - Of course condensed milk is milk. It says it in the name.
    - I do not care that imported chickens are more affordable, I hear that they are full of medicine which surely is not good for me.
    - Breakfast is not an important meal.
3. **Improving cooking practices may make a big difference**. The assessment produced a number of key findings about cooking: (i) women do not have time to cook long, nutritious meals; (ii) reliable foods are prepared in a very boring way (i.e. cassava without vegetables); and (iii) tasty, affordable, quick foods are preferred. These findings point to the need for TOMAK to 'get in the kitchen' and cook up some smart, nutritious solutions, *and to* then use effective DBC and SBCC strategies to ensure their uptake. Findings from the Information Consumption Survey identified other rapid changes happening in the kitchen (i.e. use of electric cooking technologies) which may be creating critical innovation windows in family kitchens – which tend to be very traditional and culturally locked-in spaces.
4. **Focus on the availability (supply) of vegetables and fish, as demand is already there**. This assessment found a surprisingly high level of existing demand for vegetables and fish. However, supply of both is extremely limited. For vegetables, year-round supply was a particular frustration. Therefore, TOMAK could confidently focus on activities that improve the reliable, year-round supply of fish and vegetables. Papaya and pumpkin leaves or flowers, cassava leaves, cabbage and bok choy are reportedly popular, home-produced or locally-sourced vegetables.
5. **Climate- and gender-smart agriculture is critical**. Tied to both the gender time-poverty and vegetable demand opportunities noted in the previous two recommendations is the need for solutions to be both climate- and gender-smart. By this, it is meant that nutrition-sensitive agricultural systems should aim to increase productivity first, ahead of expanding production. Increasing productivity typically means getting greater use out of a limited amount of resources (i.e. water, land, labour etc). This tends to be both climate-smart and places less of a burden on already stretched time availability of women – as opposed to putting more land under production which tends to consume more time, land and water. In addition, TOMAK needs to look at interventions close to the home – again so as to not further over-burden women and other primary child caregivers. Considering the ample amount of evidence already at hand in Timor-Leste, TOMAK should therefore consider supporting systems such as keyhole gardening (KHG), integrated fish farming (IFF), inter-cropping/conservation agriculture (CA), and less proven activities like household chicken/ egg production.
6. **Develop modular business plans for NSA systems**. As noted above, supporting production of nutritious foods must also be income-generating. TOMAK must invest in testing and teasing out modular business models to accompany its NSA interventions. Fortunately, for KHGs and IFF these already exist for the Timor context. However, caution needs to be conveyed to also include compelling home consumption messages so all the additional nutritious food produced is not all sold, resulting in continued malnutrition; and income from sales is reinvested in healthy family outcomes.
7. **Storage solutions for legumes and nuts**. Households already prefer to consume these important protein sources, but due to low productively and premature spoilage (as high as 30%), they are available only seasonally. Therefore, TOMAK should focus on promoting ways to preserve and prolong the seasonal availability of legumes and nuts. Where possible, such solutions should be promoted through the private sector – ideally replicating the success of Mercy Corps' silo seed grain storage approach. To date this has seen over 50% of all rural households adopting this technology, with over 45,000 households paying full price for it.

8. **Support government-to-government NSA coordination and collaboration**. As found during this assessment, there is a need for more functional bridges between the government's Ministry of Health (MoH) and Ministry of Agriculture and Forestry (MAF). This was particularly true around the need for households to understand ways to address under-nutrition through their own farming practices. Therefore, it is recommended that TOMAK use nutrition-sensitive agriculture (NSA) approaches as a functional bridge, adapting NSA approaches to the Timor context, formalizing the result into a manual targeting both MoH and MAF decision-makers as well as frontline extension staff, and then delivering applied training for both groups. It may be more effective to have both MAF and MoH staff participate in the same training. Local NGOs and other stakeholders may also be considered for inclusion.
9. **Additional research – household decision-making**. While a number of household-level issues were identified during this assessment, the assessment itself did not thoroughly investigate the household-level dynamics contributing to why information received has not been translating into the desired actions. Additional research into this area should be closely coordinated with the formative research proposed in the first recommendation.

Appendices

Appendix 1: FGD Question Guide

FGD Number: _____ Area Code Number: _____

Municipality: ……
Postu Administrativu: ……
Suku: …….
Date: ……

INTRODUCTION AND CONSENT

Good morning/afternoon/evening. My name is _____. I am here on behalf of Mercy corps / TOMAK Program. I am here to understand people's food consumption practice and people's understanding on nutrition.

If you agree to take part, I will ask you to participate in this study. The information will be used to improve behaviour change communication on nutrition issues and other relevant interventions.

Your identity and responses will be kept confidential, which means we will remove anything that could identify you as taking part in this study, such as names or suku if desired. Your answers to my questions will be combined with answers from many other people, so that no one will know that the answers you give me today belong to you. The answers that you provide will help to develop better behaviour change communication on nutrition issues for people in your community.

You can decide not to answer any question that you do not want to, you can stop your participation at any time without explanation, or you can request that your answers are removed from the research at any time.

The FGD will take about 2 hours.

Do you want to ask me any questions about the study at this time?

Do you agree to participate in this FGD?

Yes / No

Facilitator Name:_____

Participants

	Age	Marital Status	Occupation	Educational status
P1				
P2				
P3				
P4				
P5				
P6				

Question Guide:

Warm-up questions:

1. What words are used to describe characteristics of foods?

- ➔ Probing: delicious, healthy, nutritious, giving strength, bitter, cold, etc.

2. Do people know about food groups? How are they grouping food?
3. When are times that you consider to be:
    a. Normal time
    b. Difficult time
    c. When party/ceremonies are peaked
    d. Special occasions when better foods are prepared?

Using modified short-pile method: show food cards and ask the participants to group the cards according to the following questions/instructions:

4. Will you group the foods/drinks into 3 food groups/drinks; (1) that are considered highly nutritious; (2) not so nutritious; (3) unhealthy? (10 Mins)
5. Now let's discuss together the grouping. (10 Mins)
    - ➔ Probe: why do you think certain foods are categorised as nutritious foods?
    - ➔ Why some foods are unhealthy?
    - ➔ Why other foods are in the middle category?
    - ➔ Any disagreements?
    - ➔ What foods are considered to be delicious or luxury foods? (5 Mins)

Repeat the process

6. Will you group the foods/drinks into 3 food groups/drinks; (1) good or healthy for children 6-23 months; (2) not so good for for children 6-23 months; (3) Bad for children 6-23 months. (10 Mins)
7. Now let's discuss together the grouping. (10 Mins)
    - ➔ Probe: Is there any differences than the first grouping?
    - ➔ What are they?
    - ➔ Why they different than the previous?
    - ➔ Any disagreements?
    - ➔ What foods do children 6-23 months like or prefer?? (5 Mins)
    - ➔ What foods are considered to be essential or necessary for children 6-23 months? (5 Mins)
    - ➔ If cost and availability aren't an issue, what might you include in the diet of your child aged 6-23 months or feed them more regularly? (5 Mins)

Repeat the process

8. Will you group the foods/drinks into 3 food groups/drinks; (1) good or healthy for pregnant women; (2) not so good for pregnant women; (3) Bad for pregnant women. (10 Mins)
9. Now let's discuss together the grouping. (10 Mins)
    - ➔ Probe: Is there any differences than the previous groupings?
    - ➔ What are they?
    - ➔ Why they different than the previous?
    - ➔ Any disagreements?
    - ➔ What foods do pregnant women like or prefer? (5 Mins)
    - ➔ What foods are considered to be essential or necessary for the pregnant women? (5 Mins)
    - ➔ If cost and availability aren't an issue, what might you include in the diet of pregnant or feed them more regularly? (5 Mins)

Repeat the process

10. Will you group the foods/drinks into 3 food groups/drinks; (1) good or healthy for lactating mother; (2) not so good for lactating mother; (3) Bad for lactating mother. (10 Mins)
11. Now let's discuss together the grouping. (10 Mins)
    - ➔ Probe: Is there any differences than the previous groupings?
    - ➔ What are they?
    - ➔ Why they different than the previous?
    - ➔ Any disagreements?

- ➔ What foods do lactating mother like or prefer?? (5 Mins)
- ➔ What foods are considered to be essential or necessary for the lactating mother? (5 Mins)
- ➔ If cost and availability aren't an issue, what might you include in the diet of lactating mother or feed them more regularly? (5 Mins)
- ➔ Are there any specific foods associated with increased breastmilk production or decreased breastmilk production? (5 Mins)

12. In there anything you want to say? (10 Mins)

Thank you very much for your participation.

Appendix 2: Key Informant Interviews Question Guide – Health Workers

Questionnaire Number: _____ KII Code Number: _____

Municipality: ……
Postu Administrativu: ……
Suku: …….
Respondent:
Sex: Male ☐ Female ☐
Date of contact: ……

INTRODUCTION AND CONSENT

Good morning/afternoon/evening. My name is _____. I am here on behalf of Mercy corps / TOMAK Program. I am here to understand more about nutrition situation in this area.

If you agree to take part, I will ask you to participate in this interview. The information will be used to develop TOMAK interventions.

Your identity and responses will be kept confidential, which means we will remove anything that could identify you as taking part in this study, such as names or suku if desired. Your answers to my questions will be combined with answers from many other people, so that no one will know that the answers you give me today belong to you.

You can decide not to answer any question that you do not want to, you can stop your participation at any time without explanation, or you can request that your answers are removed from the study at any time.

The interview will take about 30 minutes.

Do you want to ask me any questions about the study at this time?

Do you agree to participate in this FGD?

Yes / No

1. What is your title?
2. Please describe your roles and responsibilities.
3. Can you describe or tell me a bit about the health and nutritional status of the population you serve?
4. What are some of the common illnesses or problems among adults? Children? Infants?
5. Are infants and children well-nourished or malnourished in your area?
    - What type of malnutrition have you witnessed? What are some of the causes of malnutrition in your area? How can children recover from malnutrition?
6. What do the parents of healthy and well-nourished children do differently from others?
    - Probe around any practice around child feeding, maternal care, how often this they Breast feeding or what else?
7. Have you witnessed any associations or link between people's behaviours and illness or malnutrition? Do you feel that there are changes people can make to their lifestyles to be healthier? (If yes, would it be appropriate to ask their opinion on why they think people don't make the changes)

8. Do you provide any counselling or advice to the people you serve or encourage them to adopt specific behaviours? If yes, tell me how you reach the community? What material are you using? What specific technique you use for the counselling?
9. How does the population you serve respond to recommendations and advice from you or other health workers? Are they receptive? Do you feel respected by the people you serve?
10. Can you offer any advice as how to influence people in this area to adopt a specific behaviour, such as hand-washing after defecating, fortifying infant porridge, etc.?

Name and Signature of the data collector:_____

Date of sub mission:_____

Approved by:_____

Appendix 3: Key Informant Interviews Question Guide – Extension Workers

Questionnaire Number: _____ KII Code Number: _____

Municipality: ……
Postu Administrativu: ……
Suku: …….
Respondent:
Sex: Male ☐ Female ☐
Date of contact: ……

INTRODUCTION AND CONSENT

Good morning/afternoon/evening. My name is _____. I am here on behalf of Mercy corps / TOMAK Program. I am here to understand more about nutrition situation in this area.

If you agree to take part, I will ask you to participate in this interview. The information will be used to develop TOMAK interventions.

Your identity and responses will be kept confidential, which means we will remove anything that could identify you as taking part in this study, such as names or suku if desired. Your answers to my questions will be combined with answers from many other people, so that no one will know that the answers you give me today belong to you.

You can decide not to answer any question that you do not want to, you can stop your participation at any time without explanation, or you can request that your answers are removed from the study at any time.

The interview will take about 30 minutes.

Do you agree to participate in this interview?

Yes / No

Interview Start Time:_____ Interview End Time:_____

1. What is your title?
2. Please describe your roles and responsibilities.
3. Can you describe or tell me a bit about population or community you serve?
4. What are some of the challenges people regularly face in this community?
5. How frequently do you interact with community members? Do you interact with people individually?
6. When do people seek your support? What do they ask of you?
7. How would you describe your influence over the population?
8. Do you have any specific techniques you use to counsel, influence, or educate the population?
9. Who else has the ability to influence men effectively? Women? Youth?

Name and Signature of the data collector:_____
Date of sub mission:_____
Approved by:_____

Appendix 4: Key Informant Interviews Question Guide – Religious/Local Leaders

Questionnaire Number: _____ KII Code Number: _____

Municipality: ……
Postu Administrativu: ……
Suku: …….
Respondent:
Sex: Male ☐ Female ☐
Date of contact: …….

INTRODUCTION AND CONSENT

Good morning/afternoon/evening. My name is _____. I am here on behalf of Mercy corps / TOMAK Program. I am here to understand more about nutrition situation in this area.

If you agree to take part, I will ask you to participate in this interview. The information will be used to develop TOMAK interventions.

Your identity and responses will be kept confidential, which means we will remove anything that could identify you as taking part in this study, such as names or suku if desired. Your answers to my questions will be combined with answers from many other people, so that no one will know that the answers you give me today belong to you.

You can decide not to answer any question that you do not want to, you can stop your participation at any time without explanation, or you can request that your answers are removed from the study at any time.

The interview will take about 30 minutes.

Do you agree to participate in this interview?

Yes / No

Interview Start Time:_____ Interview End Time:_____

1. What is your title?
2. Please describe your roles and responsibilities.
3. Can you describe or tell me a bit about population or community you serve?
4. What are some of the challenges people regularly face in this community?
5. How frequently do you interact with community members? Do you interact with people individually?
6. When do people seek your support? What do they ask of you?
7. How would you describe your influence over the population?
8. Do you have any specific techniques you use to counsel, influence, or educate the population?
9. Who else has the ability to influence men effectively? Women? Youth?

Name and Signature of the data collector:_____
Date of sub mission:_____
Approved by:_____

Appendix 5: Summary of Secondary Data Analysis

Question	Literature/Data	Source	Information Gaps / Additional Questions
At what time of day and what does the typical household consume meals and snacks?	Dietary score is available from FNS and CRS survey (24hrs & 7 days recall) but seasonal variability is not explored	FSN 2013, CRS 2016	Consumption pattern around seasonal variation not available // how the consumption is varied during different seasons
Do pregnant and lactating women snack?	Snack is not specifically assessed in previous surveys		No evidence on the level of knowledge of women or men on the importance of the snack for PL women
What is the level of education of women/primary care givers/ head of household?	The highest level of school attended available	FNS 2013	
What is typically included in each meal	Stable food like corn, rice, roots/tubers; green leafy vegetables and other type of vegetable, sugar, oil/fat consumed mostly Bread/biscuit and noodle; orange vegetables; fruits; meat and fish; milk and dairy produce // According to CARE's food habit survey, Lunch or dinner is important meal. // Important meal served with basic food like rice /maize plus vegetable (Modo) //	FNS 2013 // CARE – Food habit report 2013	This need to be assessed specific to TOMAK areas. Particularly the type of food consumed by mother and child under less than 2 years of age. And type of food consumed in each meal

How do they eat? Do they gather together as family or do men and women eat separately? Do the family use utensils?	No strong survey around this area // In occasional cases men eat first followed by children and women. // In normal case all household members served together	CARE – Food habit report 2013	Feeding pattern is different from place to place so need to be assessed for TOMAK areas.
Are children fed before, after, during the family meals and are they fed on the same or a separate schedule?	1. Varied from place to place and from HH to HH but mostly eat with family members. Except during social event or guest come to home. // 2. Breastfeeding infants are fed 6-8 times per day (some mothers reported ever 2-3 hours). For children 6-11, they eat 2-3 times per day, older children 3-4 times per day. These are national averages.	1. CARE's Food habit survey // 2. TLFNS 2013	
What foods are considered highly nutritious?	1. Local produced rice with vegetable (Modo) // 2. In Bobonaro, several months and village chefe reported porridge and milk formula as important foods for infants health.	1. CARE's food habit survey // 2. TLFNS 2013	Knowledge about nutritious food is not clear among different community group
What foods are considered to be delicious or luxury foods?	Rice + Modo	CARE's food habit survey 2013	
What foods are considered to be "unhealthy"?	Salty foods // 2. Food with hard texture is also considers difficult for digestion.	CARE's food habit survey 2013	
At what age is anything other than breastmilk given to a child?	4 to 5 months	TL FNS 2013	to know mother or care givers level understanding about EBF
What type of food is considered to be baby's first food? What are the ingredients in baby's first food? What is the density? At what age is this food introduced to the baby? How is the baby fed? Do mothers breastfeed before or after feeding?	Some areas prelacteal feeding is common – Sweet condensed milk (SCM) or water. // Switching from breast milk to hard foods is sometimes as late as 7, 8 even 12 months // Some residents closer to Dili switch to formula even as an infant.	TL FNS 2013	Current knowledge and practice specific to TOMAK area need to assessed

What foods are considered to be good or healthy for children?	1. Food with good test (not too sweet and not sour) good scent like local rice and soft food. // In addition, dry food considered as less nutritious than wet food // 2. Most mothers focus on carbohydrate source food only and did not really pay attention to other important nutrients such as protein, vitamin, and mineral.	CARE's food habit survey 2013	
What foods are considered to be bad (dangerous or inappropriate) for children 6-23 months?	Those foods with hard in texture- for example Maize unless milled and make as porridge or cassava leave.	CARE's food Habit survey 2013	
What foods are considered to be bad (dangerous or inappropriate) for children 6-23 months?	The mother is the main decision-- maker for food, but both mother and father aspire to provide more animal protein foods. Respondents acknowledged the value of giving the child formula milk, but this always depends on the finances of the family. Children should not be fed with fish, chicken and papaya. It is believed that if these foods are eaten, the child will meet an accident. The essentially nutritious red beans are also taboo.	FAO report 2015: Capacity Assessment of Social and Behaviour Change Communication for Nutrition in Timor-Leste	
What foods do pregnant women like or prefer?	"Siin" sour food considered as health for pregnant	CARE's food Habits survey 2013	There are some food taboos already explored but that is not for the TOMAK area, and as this might be change over time, it would be good to explore the current feeding pattern for mothers.
What foods are considered to be bad (dangerous or inappropriate) for pregnant women?	Salty food like sea fish and dry fish – affects child health // And others like chili and banana flower also not consumed.	CARE's food Habits survey 2013	Need to explore more for the TOMAK areas for any other food considers as dangerous

What foods are considered to be bad (dangerous or inappropriate) for lactating women?	Like pregnant mother there are varies kind of food group not consuming during lactation, this include rice porridge, banana flower, cassava leave, boiled maize. Fried fish, fruits and Goat meat	CARE's food Habits survey 2013	No clear information for TOMAK area
How are purchases of food managed? Who makes these decisions and how often are the purchases made?	Mothers and their husbands, separately or jointly, were the major decision maker in the households, with minimal involvement of other person, except for place of giving birth (10%). Both mothers and their husbands made decision with regard to the health of the children and of the mothers. Husband's only decision was mainly for big household purchase and mothers' only decision was mainly for food-related decision. In Bobonaro women are the primary decision maker related to food purchases, preparation, and medical needs of the household. Fathers trust mother's knowledge on food, cooking, and children's taste.	TLFNS 2013	Literature review did not produce how often food is purchased although the freshness of food was sited as low in TLFNS 2013
What was the primary and secondary source of the food you consumed in the last 7 days? 30 days? (own production, purchased, borrowed/credit, gift from neighbor/NGO/etc.)	Primary source of food is from own production, and items like sugar and wheat (processed goods) were from purchase. Only a small number of hh's received gifts, while a negligible number received gifts.	TLFNS 2013	This is reported at the national level. Having this detailed information from our target populations will be important to inform supply and demand strategies for foods consumption.

Appendix 6: Summary Table from the Sort-Piling Exercise

	SEX	ROUND	Nutritious Food	Not so nutritious	Unhealthy
Bobonaro					
Purugua	Women	1st (in general)	Condensed milk, white rice, eggs, beef, fish, potatoes, *kangkung,* maize, string beans, red beans, soybean, sweet potatoes, cassava, banana, papaya leaves and flowers.	*Bengbeng*, sugar, white wine, instant noodle.	Imported chicken, coffee, tea, cigarette, beer, chilli, and betel nut
		2nd (for 6-12 months children)	White rice, beef, pork, egg, fish, salt, yellow pumpkin, mung bean, dear meat, *kangkung,* cassava leaves, moringa, carrots, tomato, salad, papaya and banana	Watermelon, eggplant, cabbage, papaya leaves, mango, tangerine, bread, string bean, soybean, coconut, jackfruit and cassava.	Dried fish, cigarette, beer, 33hilli, and betel nut
		3rd (for pregnant women)	White rice, mung bean, red beans, fish, eggs, chicken meat, beef, pumpkins leaves, *kangkung,* sweet potato leaves, condensed milk moringa, tomato, potato, tofu, *tempe*, toasted bread, mango, tangerine, banana, watermelon and iodized salt.	Papaya flowers, papaya leaves, *Masako*, tea, soybean, maize, *Bengbeng*, banana heart, string beans and non-iodized salt	Sugar, taro, pineapples, betel nut and non-iodized salt
		4th (for lactating mother)	Porridge, chicken, pork, beef, deer meat, papaya, mango, mung bean, red beans, condensed milk, watermelon, *kangkung*, mustard, fish, pumpkins, banana, carrots, white and red rice, potatoes, milk, eggs and water	Taro, noodles, coffee, breadfruit, jackfruit, chilli and tea	cigarettes, soft drink, white wine, betel nut, papaya leaves and tobacco
	Men	1st	Rice (red and white), condensed milk, maize, beef, fish eggs, potatoes, carrots, Papaya flowers, coconut, chilli, jackfruit, *kangkung*, string beans, red beans, banana, soy beans, tofu, *tempe*.	Instant noodles, maize, bread, sugar, *Bengbeng*, and coffee.	*Masako*, imported chicken, beer, soft drinks, cigarette, betel nut
		2nd	All red meats, white rice, eggs, fish, salt, yellow pumpkin, *kangkung,* cassava leaves, moringa, carrots, tomato, banana, papaya and mango	Taro, Cassava, coffee, sugar, papaya flower, noodles and *Bengbeng*, candy and dried fish.	Noodles, chilli, white wine, papaya leaves, soft drink, beer, *Masako,* mango and cigarettes.
		3rd	Rice, maize, fish, chicken meat, pork, beef, milk, sweet potato, cassava leaves, mung bean, coconut, pumpkins, bread, and iodized salt.	Tea, mango, tangerine, sugar, non-iodized salt, Papaya flowers, papaya leaves, banana heart and taro.	*Masako*, pineapples, dried fish, and betel nut
		4th	Banana, papaya, watermelon, pork, beef, deer meat, chicken, mustard, parsley, milk, moringa, mung beans, red beans, carrots, eggs, water and fish	Jackfruits, breadfruits, mango, tangerine, chilli, coconut, coffee, taro, non-iodized salt	Beer, white wine, tobacco, betel nut and goat meats
Raifun	Women	1st	Condensed milk, rice, beef, pork, fish, *kangkung*, tofu, *tempe*, moringa, eggs, soy beans, red beans, taro, maize, sweet potatoes, potatoes.	Pomelos, jack fruit, bread fruit, imported chicken, chili, cabbage, *Masako*,	Soft drinks, alcohol drinks, coffee, local non-iodized salt

	SEX	ROUND	Nutritious Food	Not so nutritious	Unhealthy
		2nd	Porridge, milk, local chicken, moringa, egg, beef, carrots, potato, tomato and salt	Mustard greens, chilli, tangerine/lemons, bread, pork, coconut, dried fish, *Masako, kangkung,* cassava leaves, sugar, papaya flower, *Bengbeng*, and soft drink	Noodles, jackfruits, mango, corn, moringa, yellow pumpkins, mung bean, banana heart, cabbage, white wine, coffee, tea, betel nut, eggplant, taro and cigarettes.
		3rd	Banana, papaya, water, white rice, red beans, milk, beef, *kangkung*, goat meat, mango, deer meat, red rice, pumpkins, carrot, tomato, tofu, *tempe*, potato, iodized salt, and watermelon	Mustards, *tempe*, tofu, lokal chicken, cabbage, carrots, tomato, non-iodized salt, string beans, Papaya flowers, papaya leaves, coconuts and toasted bread	Pineapples, noodles, chilli, white wine, papaya leaves and betel nut.
		4th	Carrots, mustards, mung beans, fish, eggs, red beans, milk, banana, mango, tangerine, watermelon, moringa, *tempe*, tofu, pumpkins leaves, yellow pumpkins, and red rice	Coconut, tea, banana heart, parsley, non-iodized salt, noodles, jackfruits and breadfruits	*Bengbeng*, white wine, beer, soft drink, taro, papaya flower and leaves
	Men	1st	Red rice, white rice, condensed milk, *kangkung,* moringa, tomatoes, eggs, beef, pork, *Masako.*	Imported chicken, chilli, taro, maize, sweet potatoes, papaya leaves and flowers, instant noodles, betel nuts.	Soft drinks, alcohol drinks, cigarette.
		2nd	Mustard, potatoes, carrots, soy beans, green beans, watermelon, eggs, banana, fish, *kangkung*, spinach, sweet potatoes, red rice, yellow pumpkins, mango, papaya	tangerine, eggs, soybeans, green beans, potatoes, mustard, carrots, papaya, watermelon, *kangkung*, fish, spinach, sweet potatoes, string beans, iodized salt, mango, leaves, eggplant, moringa, banana flower.	Soft drink, beer, *Masako,* and cigarettes.
		3rd	Rice, cabbage, pork, beef, chicken, condensed milk, coconut, red beans, mung beans, string beans, deer meat, fish, pumpkins, mustard, tofu, *tempe* and iodized salt	Banana heart, non- iodized salt, papaya flowers, papaya leaves, string beans, sugar, *Bengbeng* and breadfruits	Cigarettes, soft drink, chilli, white wine and beer
		4th	Milk, moringa, Deer meat, beef, local chicken, carrots, mustards, mung beans, parsley, red beans, watermelon, banana, papaya, potatoes, water, fish, and eggs	*Bengbeng*, coffee, non-iodized salt, tea and banana heart	Betel nut, white wine, beer, papaya leaves and soft drink
Baucau					
Buidau	Women	1st	Mango, condensed milk, all meats except imported chicken, taro, soy beans, red beans*, kangkung*, mustard, papaya, watermelon, cassava leaves, all meats, jackfruit, bread fruits, fish, eggs, red rice, white rice, tomatoes, water, moringa, cabbage, spinach,	Red chilli, maize, imported chicken, *Bengbeng*, cassava, tea, bread, jackfruit, noodles, *Masako*, iodized salt, sugar	Soft drinks, alcohol drinks, coffee, wines, betel nut, tobacco or cigarette, local non-iodized salt, instant

	SEX	ROUND	Nutritious Food	Not so nutritious	Unhealthy
			papaya leaves, sweet potatoes, potatoes, carrots, watercress, fresh milk, *tempe*, tofu, string beans.		noodle.
		2nd	Mustard, potatoes, carrots, soy beans, green beans, watermelon, eggs, banana, fish, *kangkung*, spinach, sweet potatoes, white rice, pumpkin, mango, papaya	Tangerine, eggs, soybeans, green beans, potatoes, mustard, cabbage, carrots, papaya, watermelon, *kangkung*, fish, spinach, sweet potatoes, string beans and iodized salt.	Soft drink, coffee, wine, beer, *Masako*, white wine, cigarettes, and betel nut, coffee, chilli, and tea
		3rd	carrots, soy beans, potatoes, pumpkin, coconut, watermelon, milk, sweet potatoes, *kangkung*, fish, red rice, Iodized salt, mango, cassava leaves, tangerine, green beans, tofu, *tempe*, salad, eggplant, pumpkin flower, papaya flower, cabbage.	Imported chicken, moringa, *Bengbeng,* iodized salt, Squash, papaya leaves and red chilli,	Soft drink, coffee, Wine, beer, *Masako*, white wine, cigarettes, and betel nut - coffee, chilli, and tea
		4th	Maize, red rice, cassava, sweet potatoes, taro, pork, beef, local chicken, eggs, mung beans, red beans, watermelon, deer meat, potatoes, cabbage, string beans, moringa, , papaya, mango, mustards, carrots, mango, tangerine, *tempe*, tofu, pumpkins and milk	Green beans, pumpkins leaves, tomato, jackfruits, coconut, imported chicken, cassava leaves, banana heart	Soft drink, white wine, betel nut, beer, *Masako*, areca nuts, coffee and tea
	Men	1st	Any kind of meats, condensed milk, fish, carrots, papaya, pumpkins, flower and leaves of papaya, banana, water melon, tomatoes, eggs, potatoes, salad, red rice, tofu, string beans, *packchoy*, *kangkong*, white rice, dried fish, mustard, cabbage, fresh milk, red beans, moringa, cassava leaves and pumpkins leaves, tangerine, taro, coconut, jack fruit, eggplant, white beans mangos, squash and soft drinks	Instant noodle, maize, *Bengbeng*, salt, *tempe*, cassava, bread, taro, jackfruit, coconuts, and mangos heart of banana, sugar, coffee, chilli, tea.	Imported chicken, wines, beers, soft drinks, *Masako*, betel nut, coffee, chilli, tea,
		2nd	Meats (beef, import chicken, pork, lambs, fish, dry fish, banana, white rice, moringa, milk, condensed milk, white rice, carrots, green beans, bok choy eggs, pumpkins and maize - Squash	Papaya flowers, papaya leaves, tomatoes, water melon, bread, *tempe*, mangos and cassava, green water vegetables, local salt, pumpkin vines, sugar and taros	Soft drink, coffee chilli, jack fruit, Wine, beer, *Masako*, white wine, cigarettes, and betel nut - coffee, chilli, and tea
		3rd	Papaya, watermelon, mango, tomatoes, bananas, pork, beef, lambs, string beans, green beans, white and red beans, white pakchoy, carrots, salad, moringa, water green veggie, parsley, white and red rice, maize., eggs, pumpkins.	Eggplant, tangerine, mango, pumpkins flowers, cabbage, papaya leaves and flowers, cassava leaves, coconut, cassava, taro, sweet potatoes and sugar.	*Masako*, soft drink, white wine, beer, betel nut and areca nuts and cigarettes

	SEX	ROUND	Nutritious Food	Not so nutritious	Unhealthy
		4th	Moringa, mustards, jackfruits, breadfruits, banana flower, beef, pork, deer meat, local chicken, *tempe*, tofu, yellow pumpkins, milk, papaya, banana, cabbage, string beans, watermelon, eggs, mung beans and pork	Tangerine, papaya leaves and flower, sweet potatoes, mango, imported chicken, pumpkins leaves, *Bengbeng* and tomato	jackfruits, soft drink, chilli, sugar, coffee, wine, beer, betel and areca nuts and breadfruits
Gariuai	Women	1st	Condensed milk, pumpkin, pomelos, carrots, water melon, fish, any meats, tomatoes, mango, red beans, red rice, white rice, squash, sweet potatoes, soy beans, string beans, tofu, *tempe*, eggplant, iodized salt, water, fresh milk, papaya flowers, cabbage, coconut, banana, *kangkung*, mango, instant noodles, *Masako*.	Local non-iodized salt, *Bengbeng*, sugar, maize, taro, sweet potatoes.	Coffee, chilli, soft drinks, beer, cigarettes, imported chicken, betel nut, local wine.
		2nd	Fish, dry fish, banana, white rice, moringa,, green beans, watermelon, eggs, banana, fish, *kangkung*, spinach	Heart of banana, papaya leaves, white beans, cassava leaves, sweet potatoes, red beans, tangerine, cabbage, coconut, *Bengbeng* tofu, squash, string beans salad, eggplant, parsley and pumpkin vines.	*Masako*, white wine, cigarettes, and betel nut.
		3rd	Papaya, mango, tangerine, Iodized salt, mango, cassava leaves, green beans, tofu, *tempe*, salad, pumpkin flower, papaya flower, cabbage.	Noodles, eggplant, taro, papaya flowers and leaves, *kangkung*,	Betel nut, pineapples, mustard, cigarette and chilli
		4th	Milk, animal meat (pork, deer, cattle, goats, chicken, etc), moringa, banana, watermelon, tangerine, bread, papaya, pumpkins, cabbage, string beans, mung beans, maize, dried fish, *kangkung*, eggplants, cassava leaves, sweet potatoes leaves, papaya flower, spinach and tomatoes	*Bengbeng*, coffee, banana heart, tangerine and chilli	Soft drinks, beer, wine and betel nut
	Men	1st	Beef, pork, condensed milk, fish, white rice, carrots, papaya, banana, water melon, tomotoes, eggs, potatoes, salad, red rice, tofu, string beans, *packchoy*, *kangkung*, dry fish, cabbage, fresh milk, red beans, moringa, cassava leave and coconut, jackfruit/bread fruit, eggplant, mangos, banana, papaya leaves and flowers, maize, white sweet potatoes, Iodized salt, squash, pumpkin, pumpkin leaves, papaya flower, jackfruit,.	Instant noodles, water, tea, soft drinks, bread, coconut, local non-iodized salt, coffee, taro, *Masako*, cassava, *Bengbeng*.	Alcohol, tobacco and cigarette, chilli, betel nut.
		2nd	Condensed milk, Porridge, watermelon, banana, papaya, local chicken, white rice, eggs, and milk	Mango, taro, meats, jackfruits, coconut, red beans, red rice, *tempe*, tahu, squash, pumpkin, cassava, cassava leaves, eggplant, moringa and papaya leaves and flowers.	Imported chicken, betel nut, taro, cassava leaves and white wine

	SEX	ROUND	Nutritious Food	Not so nutritious	Unhealthy
		3rd	Meat, banana, condensed milk, eggs, mustard, tomato, imported chicken, water, moringa, maize, soybeans, green beans, mango, tangerine, carrots, papaya, fish, spinach, water salad, potatoes, red beans, red rice and milk	Tangerine, mango watermelon, bread, *Bengbeng*, taro, papaya flowers, papaya leaves, local salt, squash, salad, cassava leaves, coconut, maize, eggplant, *Masako*, cabbage, and chilli	Alcohol, tobacco, chilli, betel nut, cigarette, wines.
		4th	Taro, spinach, mustards, maize, eggs, pumpkins leaves, yellow pumpkins, mung beans, tomatoes, *kangkung*, papaya flower, banana, watermelon, local chicken, milk, string beans, mung beans, red beans, deer meat, beef, goat meat and papaya flower	Mango, papaya leaves, tangerine, tofu and *tempe*	*Bengbeng*, coffee, chilli, Betel nut, white wine, beer, cigarettes and tobacco
	Viqueque				
Vagia	Women	1st	Condensed milk, mustard, potatoes, carrots, soy beans, green beans, water melon, eggs, banana, fish, *kangkung*, spinach, sweet potatoes, red rice, white rice, soy beans, string beans, potatoes, mustard, carrots, papaya, water melon, pumpkin, tangerine, eggs, *kangkung*, fish, spinach, sweet potatoes, string beans, mango, papaya, red beans, *tempe*, tofu, squash, pumpkin, cassava, casava leaves, eggplant, moringa, banana flower.	Iodized salt, mango, taro, cassava, meats, jackfruits, coconut,	Soft drink, coffee, wines, beer, *Masako*, cigarettes, and betel nut, coffee, chilli, and tea.
		2nd	White rice, pork, beef, maize, fish, mung bean, condensed milk *(enaak*), red beans, spinach, carrot, watercress, goat meat and moringa	Taro, meats, jackfruits, coconut, tofu, red beans, red rice, *tempe*, tofu, japan pumpkin, pumpkin, cassava leaves and cassava	Candy, coffee, white wine, beer, soft drink and dried fish
		3rd	Red and white rice, tangerine, mango deer meat, pork, beef, tomato, cabbage, cassava, sweet potatoes, tofu, *tempe*, banana, papaya, white milk, condensed milk, carrot, potato, red beans, fish, water, mustard, salad, *kangkung*, cassava leaves, string beans, watermelon, pumpkins leaves and coconut.	Dried fish, maize, bread, noodles, chilli, *Bengbeng*, papaya leaves.	Sugar, coffee, *Masako*, tea, white wine, beer, soft drink, cigarettes, tobacco, betel nut, chicken imported and non-iodized salt
		4th	Beef, local chicken, pork, goat meat, mustards, pumpkins, mung beans, tomatoes, papaya, banana, watermelon, red beans, string, milk, jackfruits, breadfruits, red rice, beans, green beans, tofu, *tempe*, *kangkung*, spinach, and moringa	Imported chicken, non-iodized salt, white rice, Squash, chilli, bread, cassava leaves, papaya leaves and flowers.	Tobacco, cigarettes, betel nut, white wine, beer and *Bengbeng*
	Men	1st	Meats (beef, pork, lambs, fish, dry fish, imported chicken), banana, red rice, moringa, condensed milk, white rice, carrots, green beans, *pakchoy*, eggs, pumpkins, squash, maize, Papaya flowers, tomatoes, water melon, bread, *tempe*, mangos, red beans, tangerine, cabbage, coconut, tofu, string beans, eggplant,	Cassava, green water vegetables, local salt, *Bengbeng.*	Soft drink, coffe chilli, jack fruit, Wine, beer, *Masako*, white wine, cigarettes, and betel nut, coffee and tea

	SEX	ROUND	Nutritious Food	Not so nutritious	Unhealthy
			mustard and pumpkins and pumpkin leaves, heart of banana, papaya leaves, red beans, cassava leaves.		
		2nd	eggs, spinach, fish, carrots, green beans, mango, tangerine, white rice, moringa, soy beans, red beans, tomato, water salad, mustard, condensed milk, dried fish, water, papaya, imported chicken, mango, meats, banana,	Pomelo, banana, water melon, bread, *Bengbeng*, taro, banana flower, local salt, pumpkins, squash string beans, tofu, *tempe*, salad, cassava leaves, coconut, maize, cassava, eggplant, *Masako*, cabbage and chilli	Alcohol, Tobacco, chilli, betel nut, areca nut, cigarette, white wine.
		3rd	Condensed milk, meats, , red rice, white rice, pork, beef, papaya, mango, watermelon, cassava, sweet potatoes, *tempe*, tofu, water, tangerine and iodized salt	*Bengbeng*, dried fish, taro, papaya leaves, papaya flowers, pumpkin vines, sugar, taros, sweet potatoes pumpkins leaves and string beans	Sugar, *Masako*, white wine, beer, betel nut and imported chicken
		4th	Maize, red and white rice, papaya, papaya leaves and flower, cassava, cassava leaves, yellow pumpkins, pumpkins leaves, pork, beef, local chickens, moringa, watermelon, banana, jackfruits, breadfruits, string beans, mung beans, red beans, tofu, *tempe*, spinach, milk, *kangkung*, mustards and tomatoes	Cabbage, chilli, noodles, non-iodized salt, bread, *Bengbeng*, pumpkin vines, sugar, taros, sweet potatoes.	Sugar, coffee, soft drink, betel nut, wine, and beer

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